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Finding the evidence: Search and reporting methodologies for systematic reviews and meta-analyses

Linda Östlundh

National Medical Library, UAE University, Al Ain, lostlundh@uaeu.ac.ae

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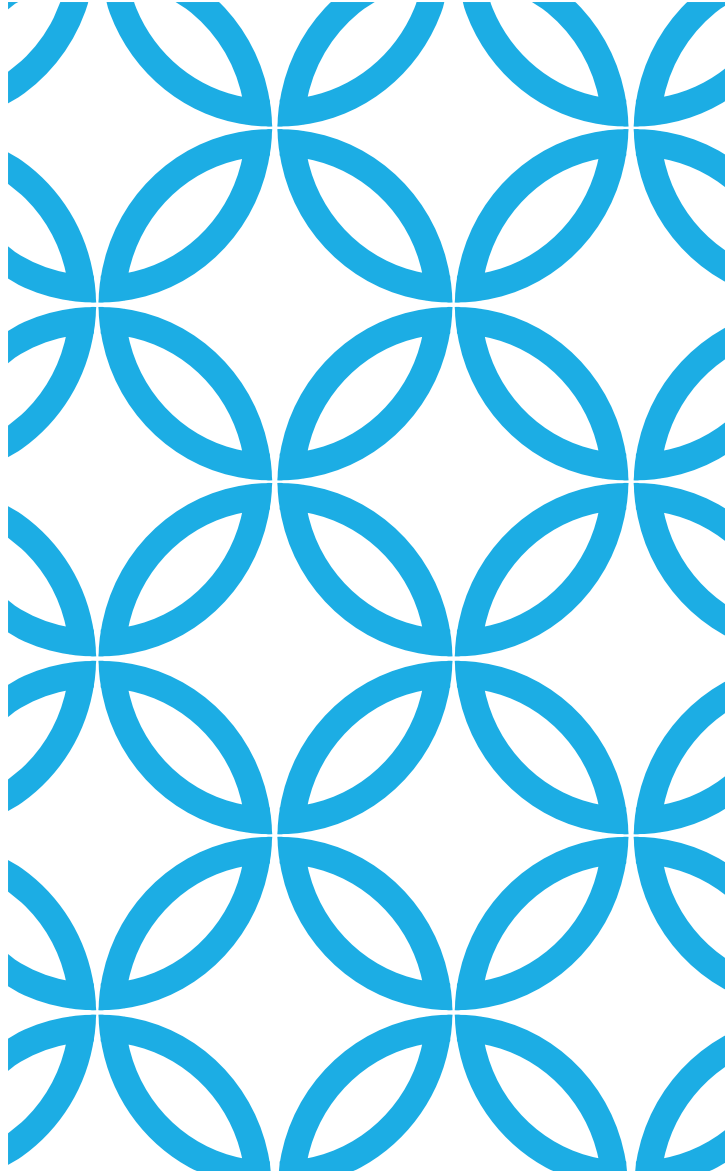


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FINDING THE EVIDENCE

SEARCH AND REPORTING METHODOLOGIES FOR SYSTEMATIC REVIEWS AND META-ANALYSES

Linda Östlundh

Director, the National Medical Library,
United Arab Emirates University, Al Ain

lostundh@uaeu.ac.ae

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Systematic Reviews and Meta-analyses in Evidence-Based Medicine



A CUTTING EDGE WORKSHOP

A theoretical and practical workshop on the key principles of systematic reviews and meta-analyses in the context of Evidence-Based practice and research

Organized by

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May 2-3, 2019

- ◆ Early bird registration until April 26th 2019
- ◆ Limited seats available
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- ◆ Venue: The National Medical Library, College of Medicine and Health Sciences, UAEU, Al Ain



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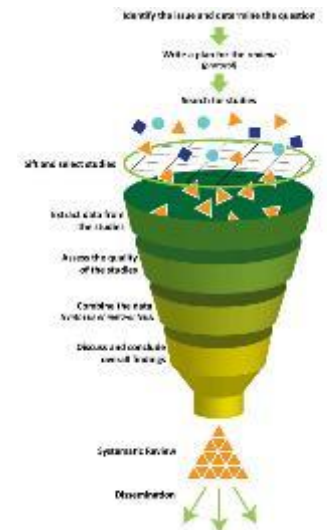
<http://nml.uaeu.linguides.com/EBMworkshop>



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CONTENT

- ❖ Systematic reviews and meta-analyses: background and development, connection to EBM and clinical usefulness and impact
- ❖ The research process and reporting standards
- ❖ The systematic search process and search methodologies
- ❖ Practical examples of search technical impact on the search/research result



SYSTEMATIC REVIEW: DEFINITION

“A systematic review attempts to **collate all empirical evidence** that fits **pre-specified criteria** in order to answer **a specific research question**. It uses explicit, **systematic methods** that are selected with a view to **minimizing bias**, thus providing more reliable findings from which conclusions can be drawn and decisions made”.

Many systematic reviews also contain **meta-analysis**, statistical methods to summarize the results of the identified studies.



CONNECTED TO EVIDENCE BASED MEDICINE

- ❖ The first formal guides for systematic review methods dates back to the mid-1970s (ePPI centre, 2016)
- ❖ Developed together of Evidenced Based Medicine in the mid-1990s
- ❖ The Cochrane Collaboration formed in 1993 (“Promote evidence-informed health decision-making by producing high-quality, relevant, accessible systematic reviews and other synthesized research evidence”)
- ❖ Gordon Guyatt: first to coin the term EBM in 1993
- ❖ The “father” of EBM: David Sackett (“Evidence based medicine: what it is and what it isn’t”, *BMJ*, 1996)

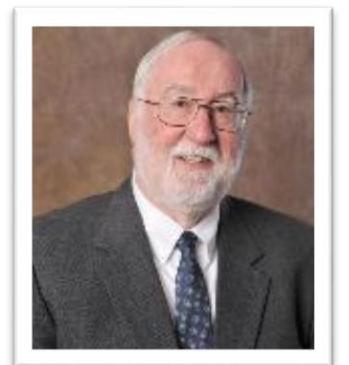
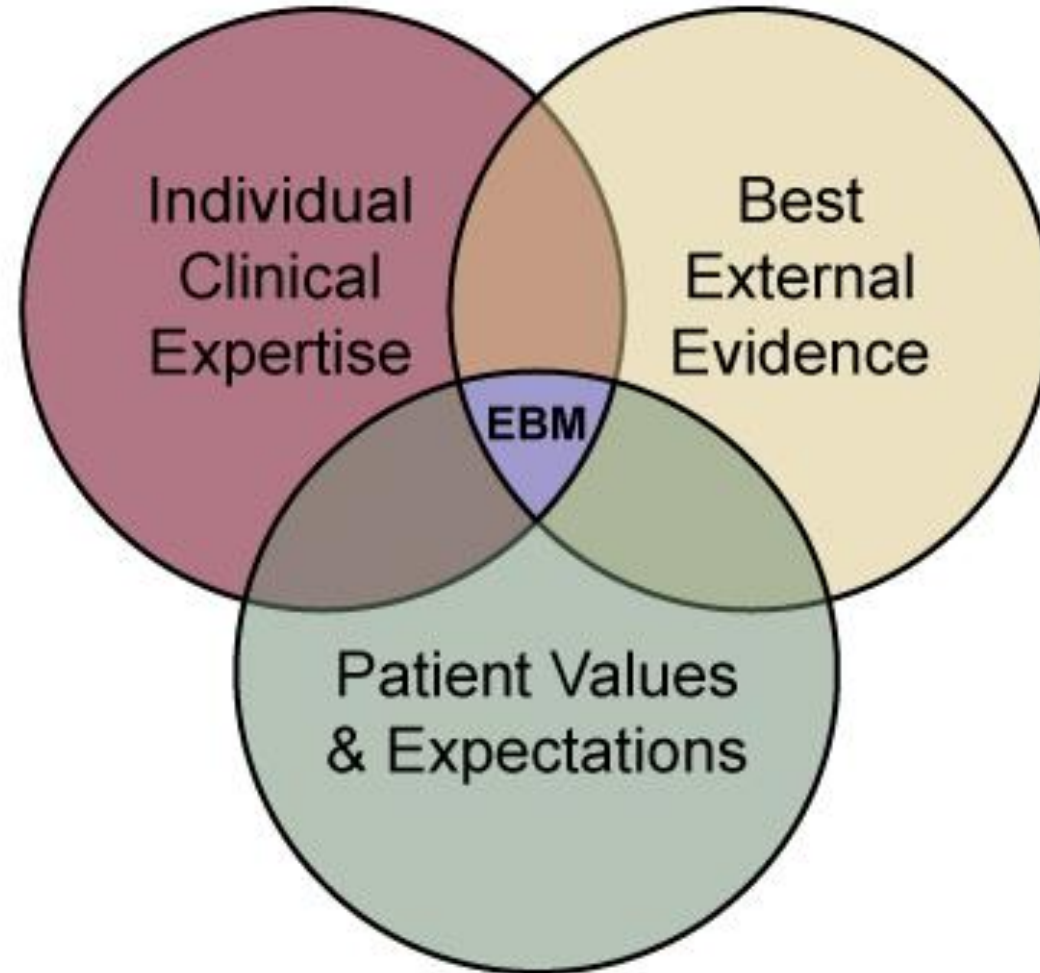
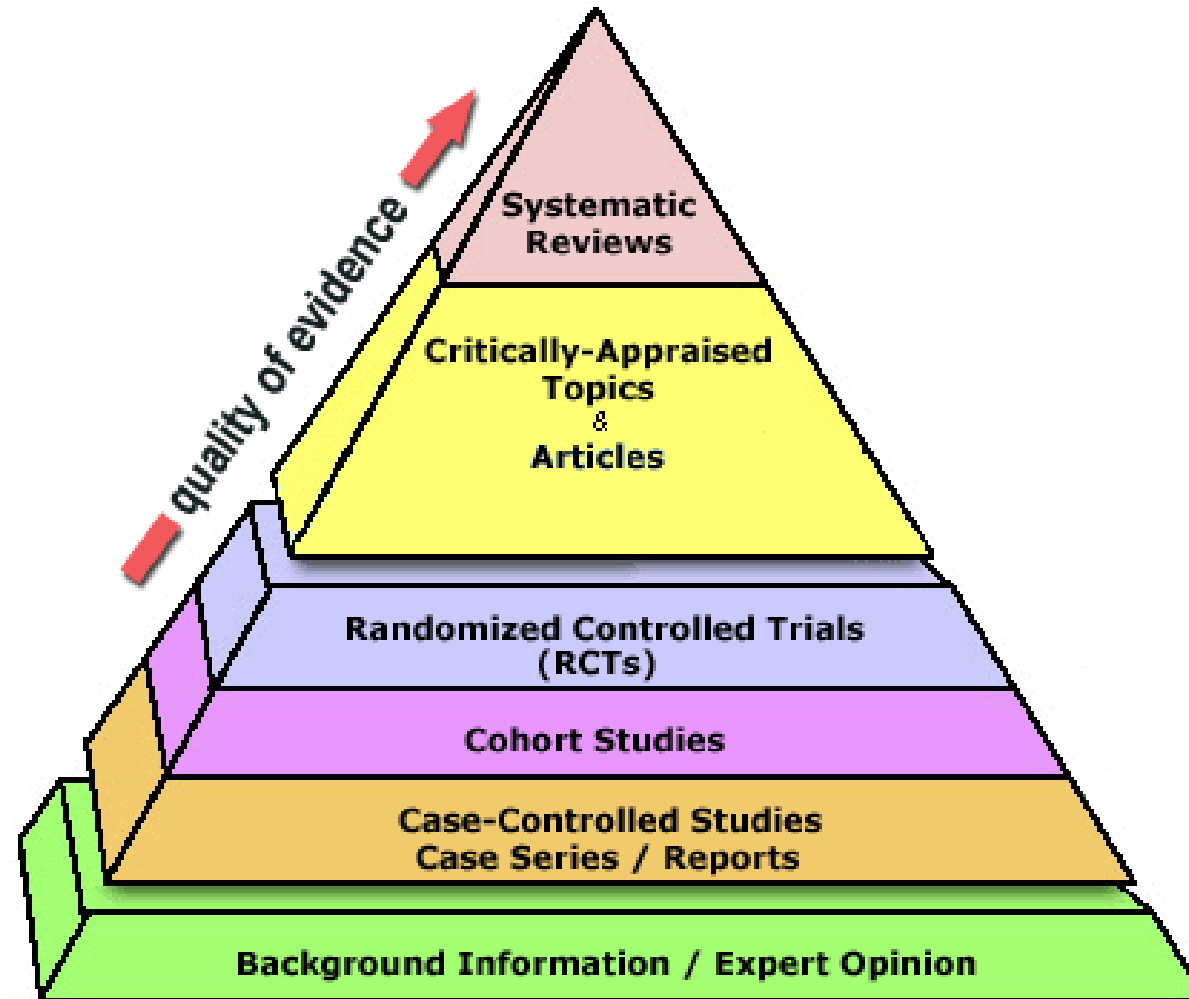


Image from BMJ

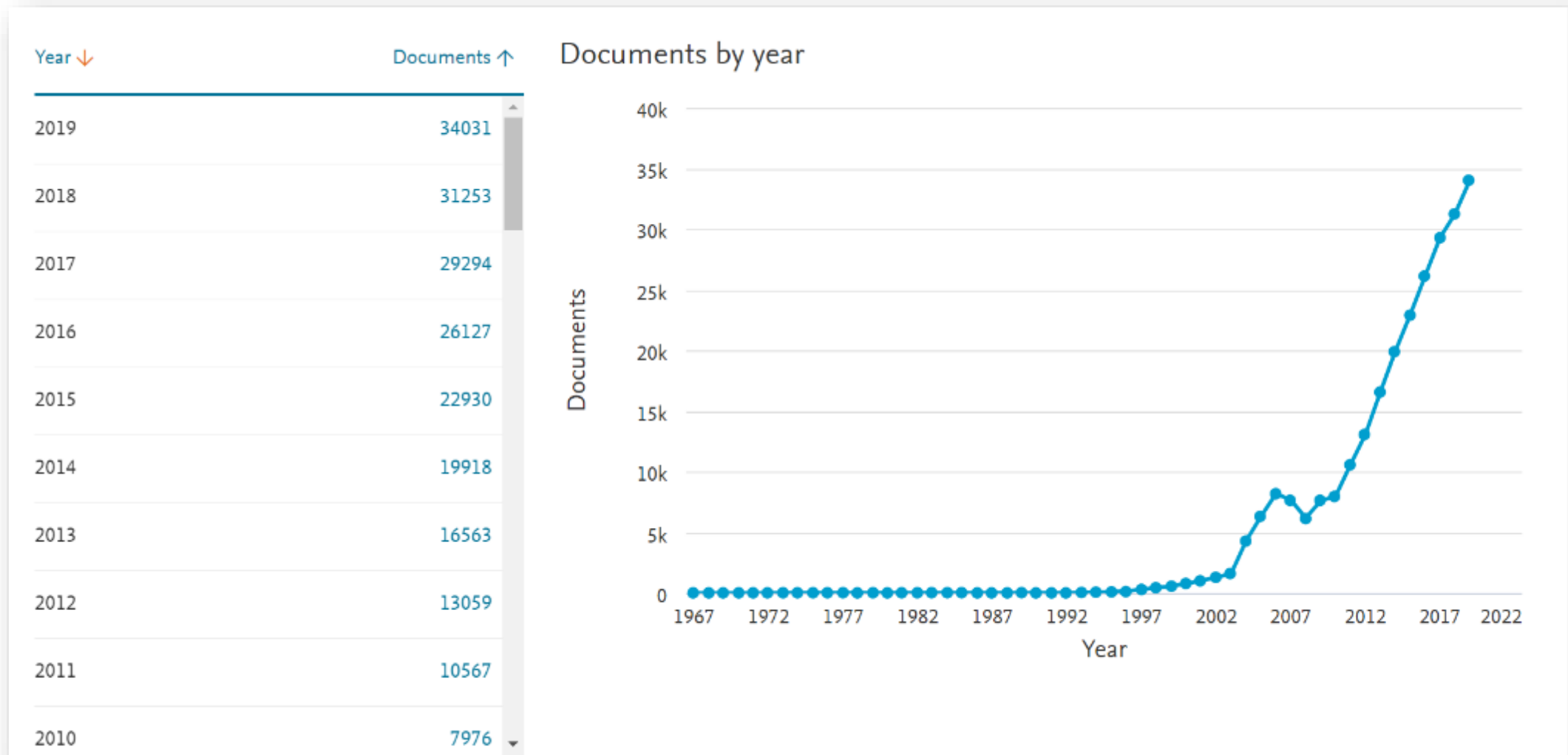
THE EBM TRIAD



SYSTEMATIC REVIEWS: BEST AVAILABLE EVIDENCE

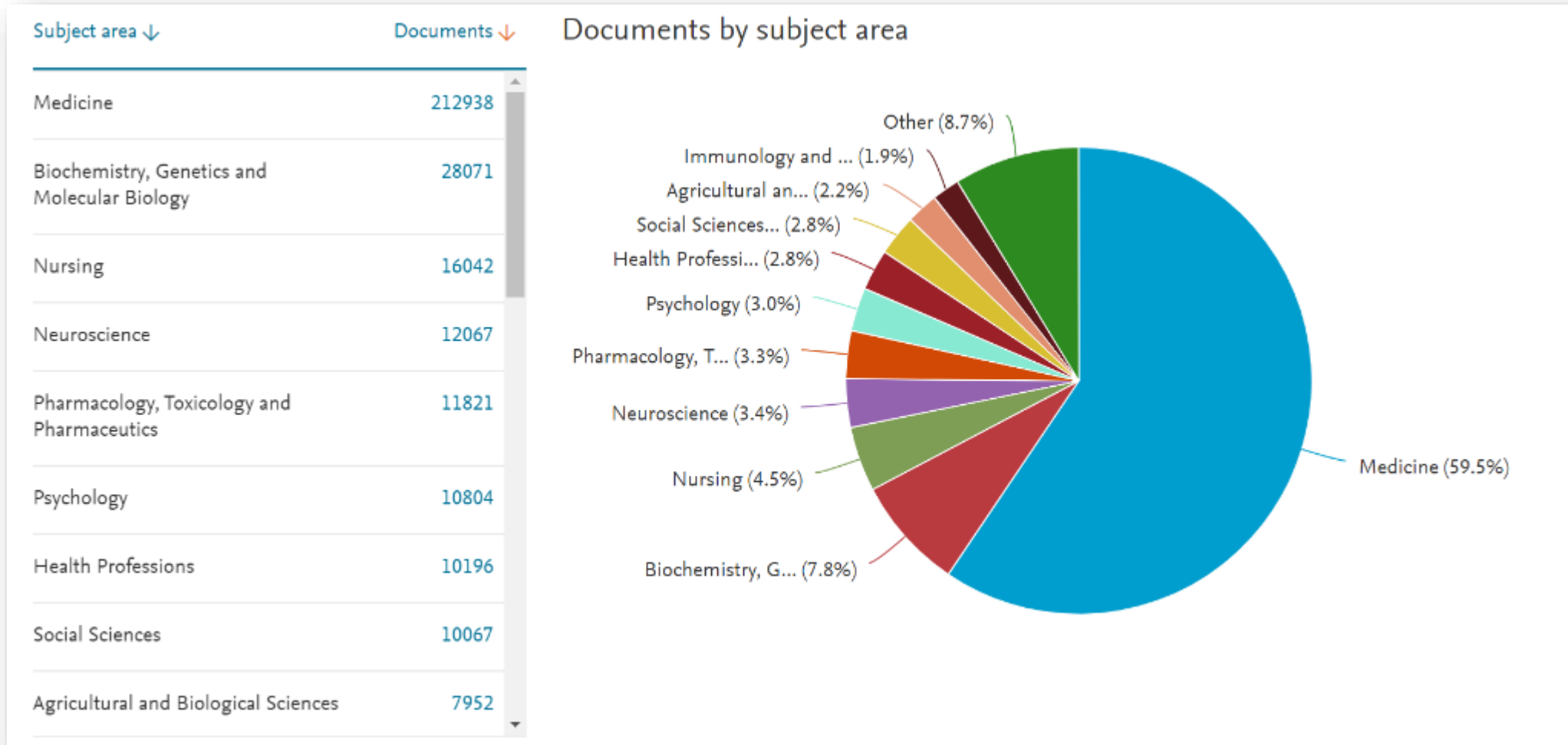


INCREASED NO. OF PUBLISHED SYSTEMATIC REVIEWS



Source:SCOPUS

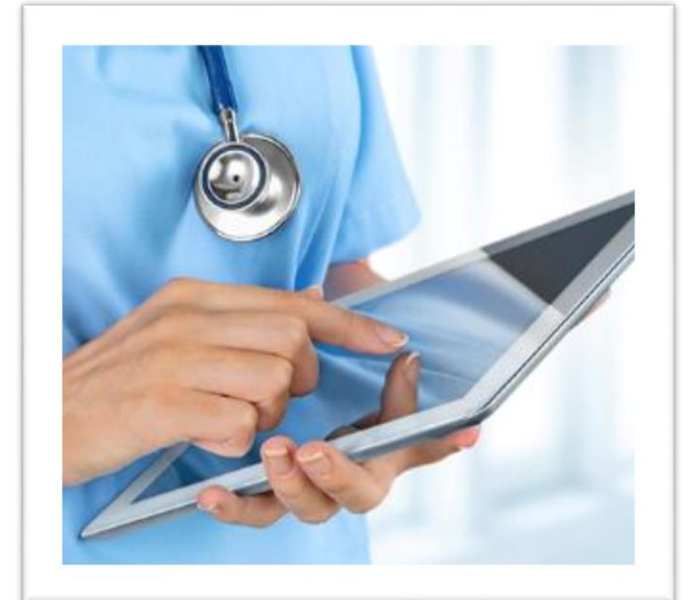
DOCUMENTS BY SUBJECT AREA



Source: SCOPUS

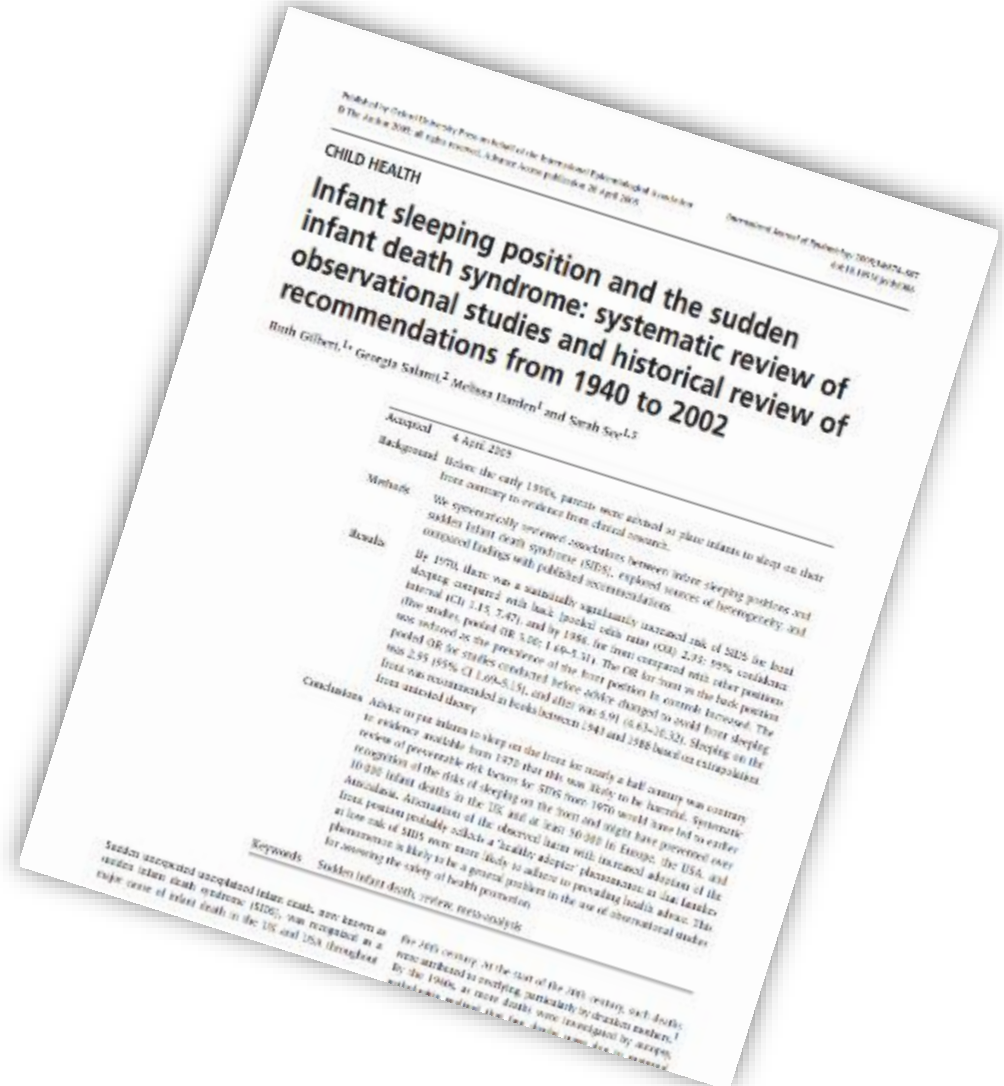
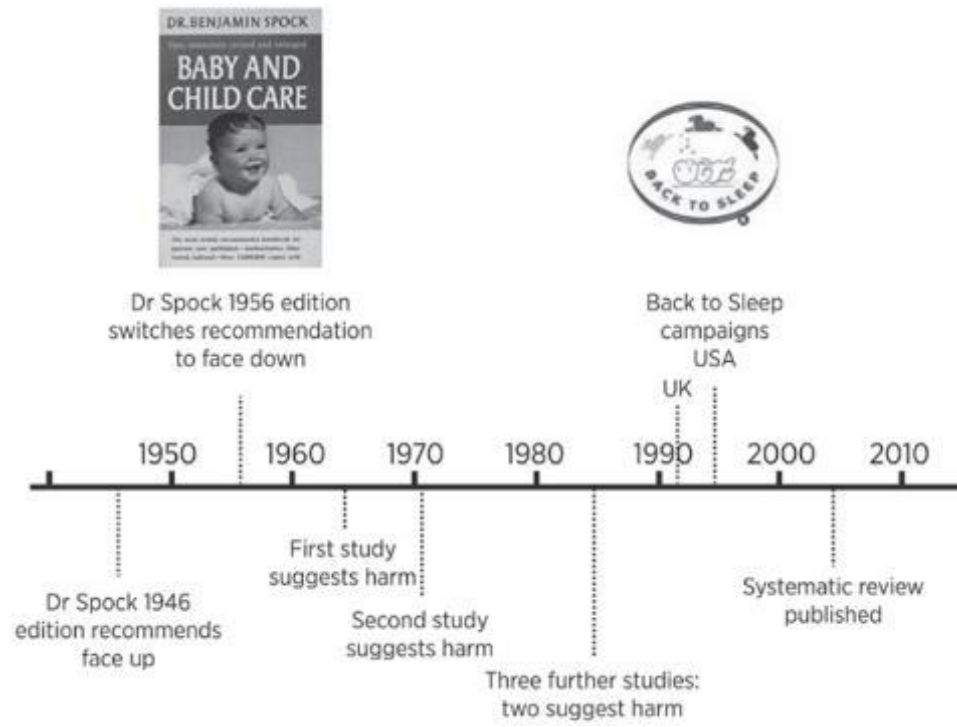
SRs AND MAs AND EVIDENCED BASED PRACTICE

- ❖ Supports evidence-based clinical decision making
- ❖ Informs local, national and international medical guidelines and policies
- ❖ SRs before clinical trials to reduce research waste



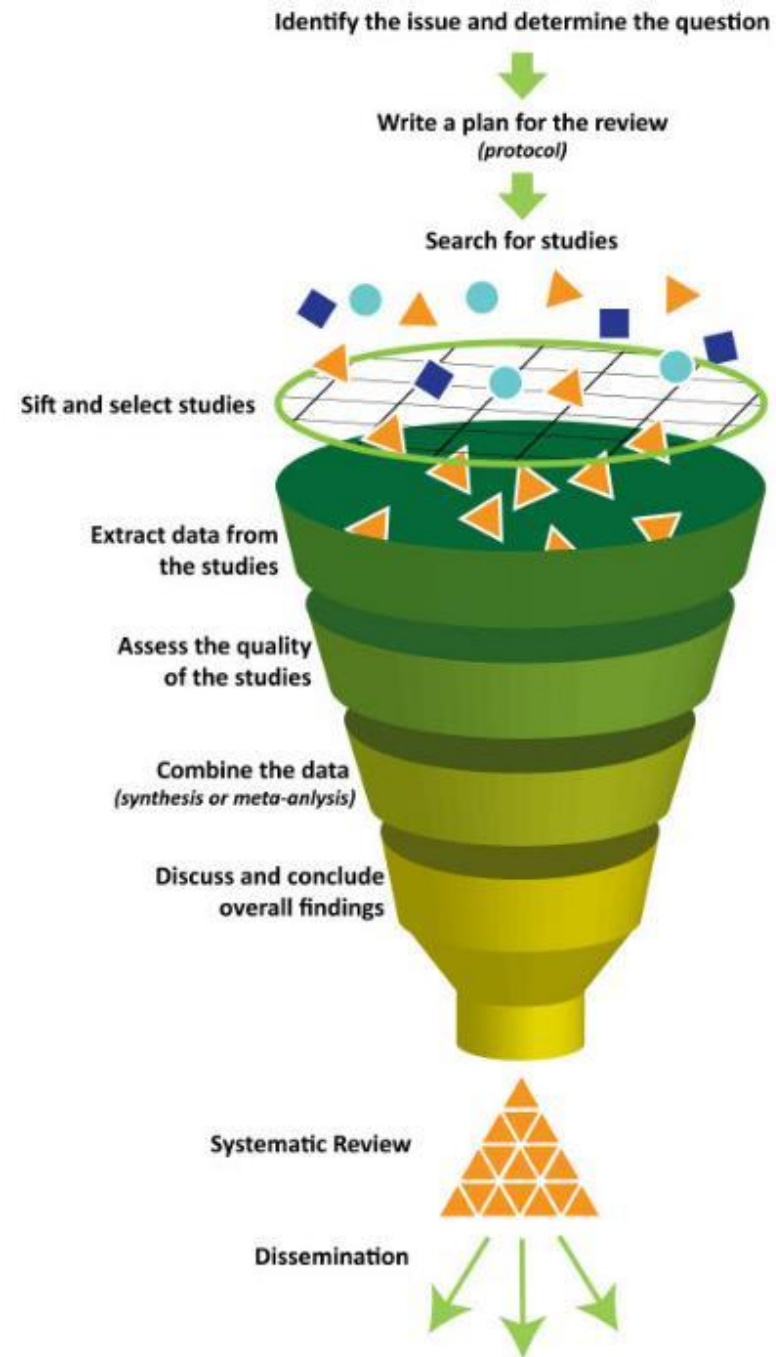
CLINICAL IMPACT OF SYSTEMATIC REVIEWS

Example: Baby's sleep position



THE SYSTEMATIC REVIEW PROCESS

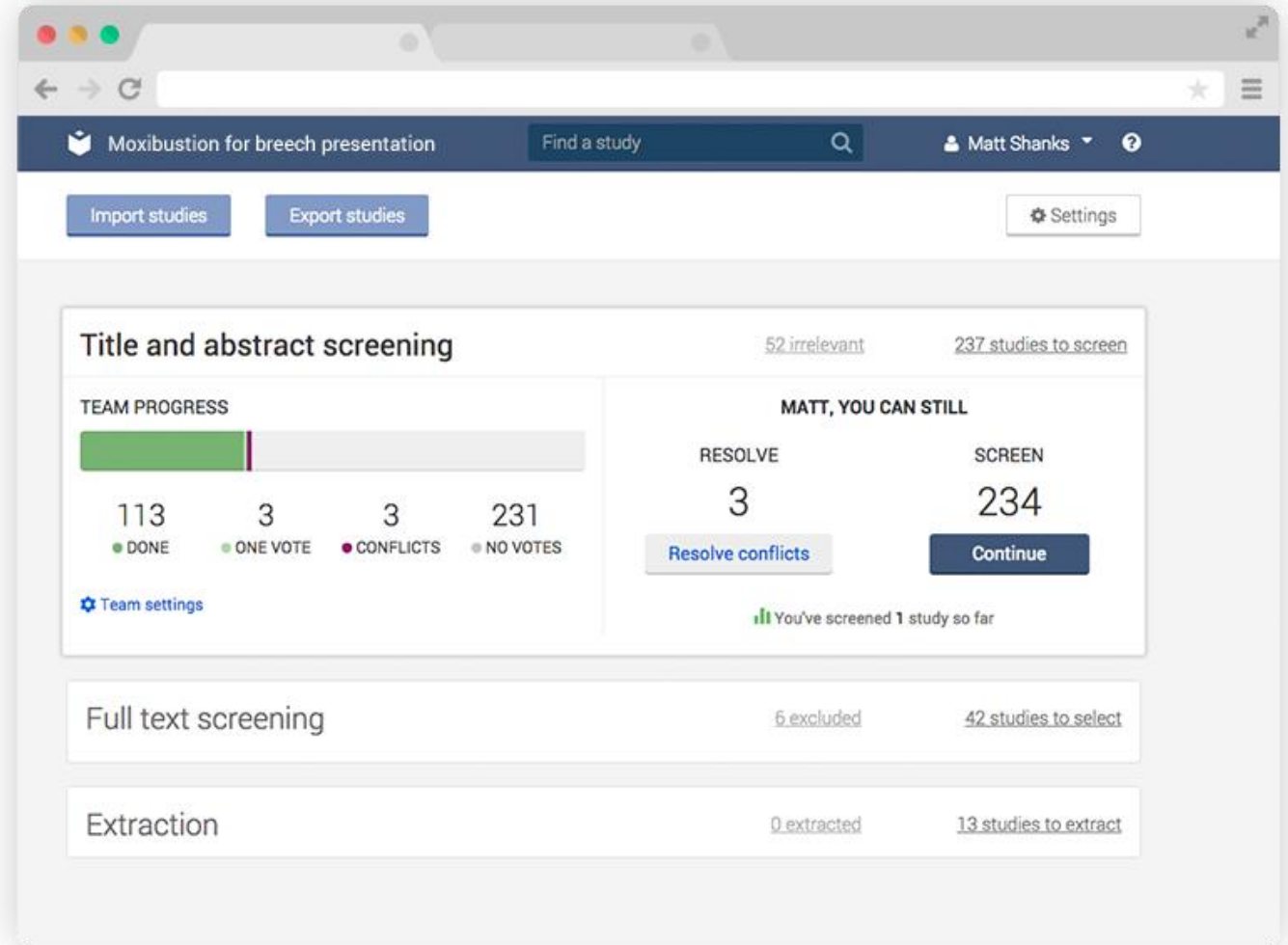
Average time for a systematic review: 18 months (Cochrane Handbook)



COVIDENCE SR TOOL

- ❖ User-friendly
- ❖ Cloud-based
- ❖ Collaboration tool
- ❖ De-duplication
- ❖ Blinded screening
- ❖ Mobile screening
- ❖ Extract and analyze

www.covidence.org



ALL STEPS ON ONE PAGE

The screenshot displays a software interface for managing a research project. At the top, a dark blue header contains the project name 'Sleep and mood', a search bar with 'Find a study', and the user's name 'Linda Östlundh'. Below the header, the main content area is titled 'Review Summary' and includes buttons for 'Settings', 'PRISMA', and 'Export'. The interface is organized into several horizontal panels:

- Import references:** Includes a link for 'previous imports' and an 'Import' button.
- Title and abstract screening:** Shows '1008 irrelevant' and '0 studies to screen'.
- Full text screening:** Shows '123 excluded' and '0 studies to select'.
- Extraction:** Shows '0 extracted' and '72 studies to extract'. This section is further divided into two sub-panels:
 - TEAM PROGRESS:** Features a progress bar and a summary of team status: 0 DONE, 1 STARTED, 0 COMPARISON REQUIRED, and 71 NOT STARTED. A 'Team settings' link is located at the bottom left.
 - LINDA, YOU CAN STILL EXTRACT 72:** A call-to-action panel with a large '72' and a 'Continue' button. A status bar at the bottom indicates 'You've completed 0 extractions so far'.

EASY SCREENING FUNCTIONS

#363 - Behnke 2002a
Behnke M; Schwertfeger I; von Froreich K; Robinson I; Joerres RA; Magnussen H
Combined exercise programs in patients with stable COPD: influence of psychological profile and monitoring [abstract]
European respiratory journal 2002;20(Suppl 38):18S
2002
[Hide Abstract & IDs](#)
Ref ID: 4900100000014700
[View history](#) [Add a note](#)

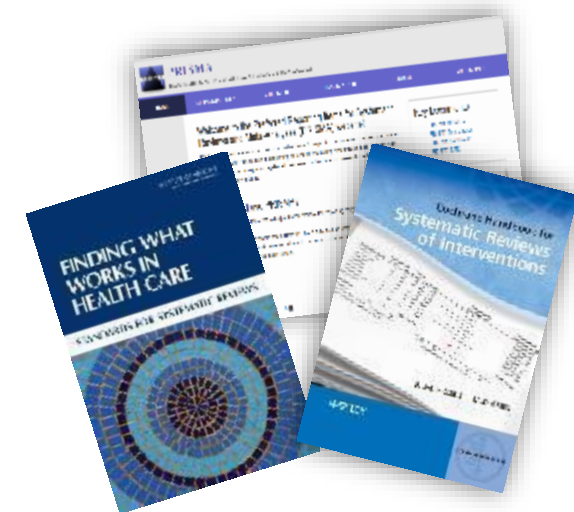
#260 - Behnke 2000a - 2 associated references
Behnke M; Taube C; Kirsten D; Lehnigk B; Joerres RA; Magnussen H
Home-based exercise is capable of preserving hospital-based improvements in severe chronic obstructive pulmonary disease
Respiratory medicine Dec 2000;94(12):1184-1191
2000 Dec
[View Abstract & IDs](#)



REPORTING METHODS

STANDARDIZED REPORTING METHODS

- ❖ 1996- The Cochrane Handbook
- ❖ 1999- QUROM (QUality Of Reporting Of Meta-analyses)
- ❖ 2000- MOOSE (Meta-analysis of observational studies in epidemiology)
- ❖ 2009- PRISMA (Preferred Reporting Items for Systematic Reviews and Meta- analyses)
- ❖ 2011- IOM (Institute of Medicines Standards for Systematic Reviews)

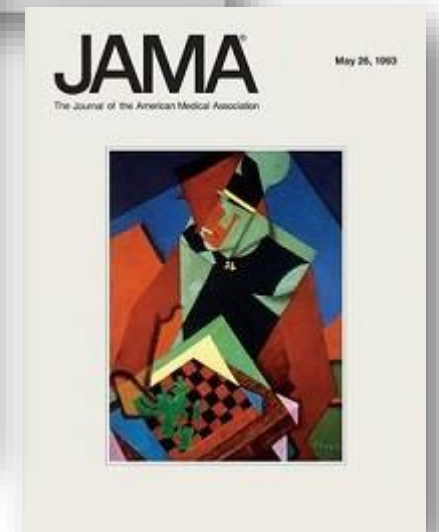


PRISMA

Preferred or required reporting method for:

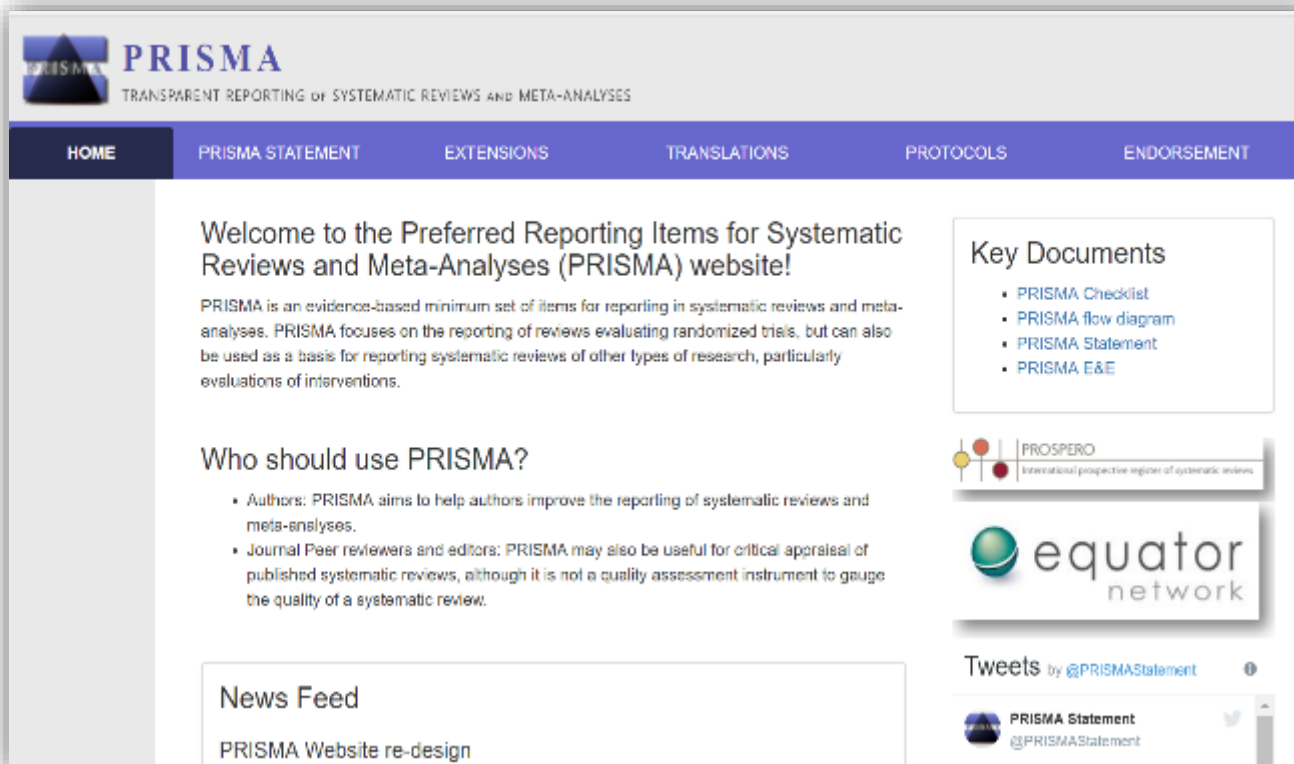
- ❖ The Lancet
- ❖ The British Medical Journal (BMJ)
- ❖ Annals of Internal Medicine
- ❖ The Journal of the American Medical Association (JAMA)

...and more



PRISMA (HTTP://WWW.PRISMA-STATEMENT.ORG/)

- ❖ List of (27) preferred reporting items for SRs and MAs
- ❖ Screening and selection flow diagram
- ❖ Help, tips and support



The screenshot shows the PRISMA website homepage. At the top, there is a navigation bar with the PRISMA logo and the tagline "TRANSPARENT REPORTING OF SYSTEMATIC REVIEWS AND META-ANALYSES". The navigation menu includes "HOME", "PRISMA STATEMENT", "EXTENSIONS", "TRANSLATIONS", "PROTOCOLS", and "ENDORSEMENT". The main content area features a welcome message, a brief description of PRISMA, and a section titled "Who should use PRISMA?" with bullet points for authors, peer reviewers, and editors. On the right side, there is a "Key Documents" section with links to the PRISMA Checklist, PRISMA flow diagram, PRISMA Statement, and PRISMA E&E. Below this, there are logos for PROSPERO and the EQUATOR network. At the bottom right, there is a "Tweets by @PRISMAStatement" section showing a tweet from the PRISMA Statement account.

THE PRISMA CHECKLIST



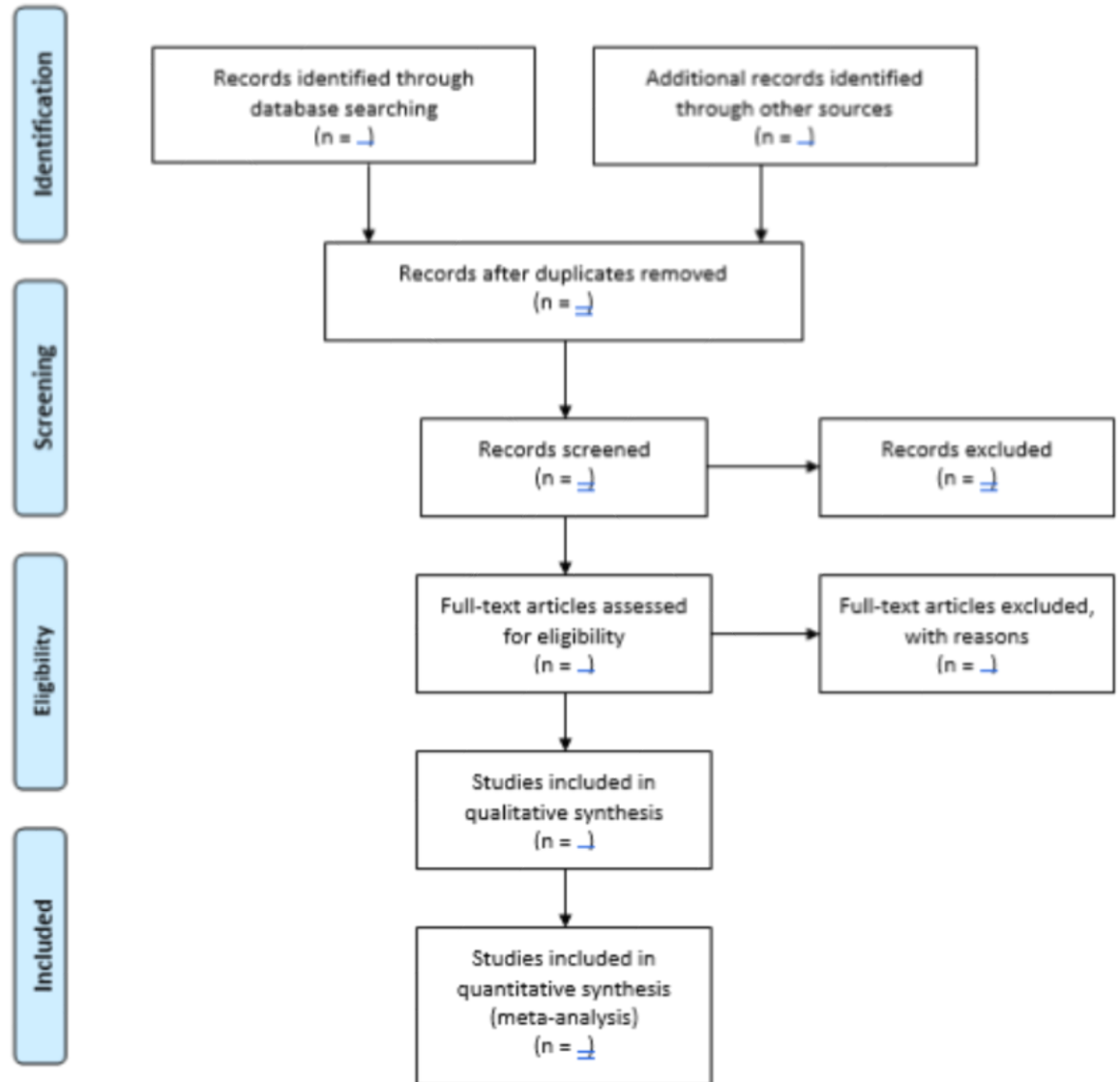
PRISMA 2009 Checklist

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	

THE PRISMA FLOW DIAGRAM



PRISMA 2009 Flow Diagram



DETAILED AND REPRODUCIBLE SEARCH DOCUMENTATION

- ❖ Database name, coverage and dates searched
- ❖ Search technical specifications
- ❖ Results from each source
- ❖ MeSH/Thesaurus variations

Appendix 1

Literature Search

Table showing full search log including search string, results and notes.

Academic Databases

Source and date	Search string	Result	Notes
PubMed Coverage: 1879- Search Date 2016-08-01	((TSH[Title/Abstract]) OR (((("receptors, thyrotropin"[Mesh] OR "Iodide peroxidase"[Mesh] OR "TPO protein, human"[Supplementary Concept] OR "thyroid microsomal antibodies"[Supplementary Concept] OR "thyroid dysmorphogenesis 1" [Supplementary Concept] OR "thyroid gland"[Mesh] OR "thyroid hormones"[Mesh] OR "thyroid diseases"[Mesh] OR "receptors, thyroid hormone"[Mesh] OR thyrotropin [Title/Abstract] OR triiodothyronine[Title/Abstract] OR thyroxine[Title/Abstract] OR "iodide peroxidase"[Title/Abstract] OR "TPO protein"[Title/Abstract] OR "TPO proteins"[Title/Abstract]OR thyroid*[Title/Abstract] OR T4[Title/Abstract]) OR T3[Title/Abstract] OR hypothyroid*[Title/Abstract] OR levothyroxine[Title/Abstract]))) AND (((("genistein combined polysaccharide" [Supplementary Concept] OR "glycitein" [Supplementary Concept] OR "lipofundin s" [Supplementary Concept] OR "soybean oil"[Mesh] OR "soybeans"[Mesh] OR "genistin" [Supplementary Concept] OR "soy foods"[Mesh] OR "sodium-iodide symporter" [Supplementary Concept] OR "daidzein" [Supplementary Concept] OR "phytoestrogens"[Mesh] OR equol[Title/Abstract] OR phytoestrogen*[Title/Abstract] OR genestein[Title/Abstract] OR genistein[Title/Abstract] OR daidzein[Title/Abstract] OR	1501	All terms searched in title and abstract and in MeSH when available. No Filters or limitations applied Notes for search terms applied: "Hypothyroidism": included under "Thyroid Diseases" in MeSH "Thyrotropin" and "Thyrotropin, Beta Subunit" included under: "Receptors, Thyrotropin" in MeSH "Thyroid Hormone Receptors alpha" and "Thyroid Hormone Receptors beta" are included under "Receptors, Thyroid Hormone" in MeSH "Thyroxine", "Triiodothyronine, Reverse" and "Triiodothyronine" are included under: "Thyroid Hormones" in MeSH

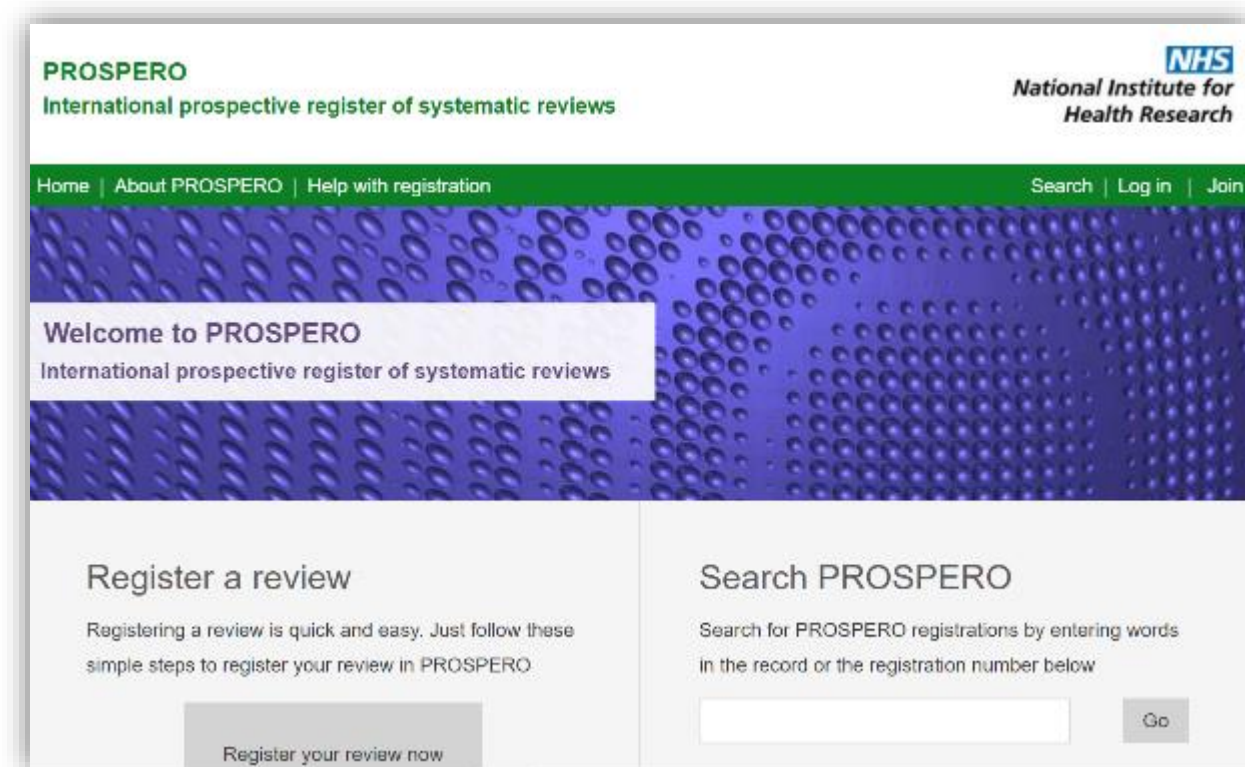
PLAN AND STRUCTURE YOUR PROCESS WITH A PROTOCOL

- ❖ Required standard item in PRISMA, Cochrane, IOM etc. for transparency of the research process
- ❖ The protocol can be published in a journal or in a register/database



PROSPERO: REGISTER FOR ONGOING AND PUBLISHED SYSTEMATIC REVIEWS

- ❖ Provides a template for protocols
- ❖ Receive an official registration no. for the review to submit to the journal
- ❖ Covers protocol items for different standards (PRISMA, Cochrane...).



PRE-SEARCH FOR ONGOING AND PUBLISHED REVIEWS

Home | About PROSPERO | How to register Search | Log in | Join

Click to [show your search history and hide search results](#). Open the [Filters](#) panel to find records with specific characteristics (e.g. all reviews about cancer or all diagnostic reviews etc)

anaphylactic shock Go MeSH Clear filters Show filters

[First](#) [Previous](#) [Next](#) [Last](#) (page 1 of 1)

6 records found for **anaphylactic shock** Show checked records only | Export

<input type="checkbox"/>	Registered	Title	Type	Review status
<input type="checkbox"/>	30/09/2019	Alprostadil combined with statins have effect in prevention of contrast-induced nephropathy: a meta-analysis of randomized control trials in China [CRD42019129505]		Review Ongoing
<input type="checkbox"/>	29/06/2016	Desmoteplase for acute ischemic stroke: systematic review and meta analysis of randomized controlled trials [CRD42016041297]		Review Ongoing
<input type="checkbox"/>	09/03/2015	Effect of pre-exchange albumin infusion on neonatal hyperbilirubinaemia and long-term developmental outcomes [Cochrane Protocol] [CRD42015017396]		Review Ongoing
<input type="checkbox"/>	30/06/2015	Paracetamol (acetaminophen) or non-steroidal anti-inflammatory drugs, alone or combined for pain relief in acute otitis media in children [Cochrane Protocol] [CRD42015024049]		Review Ongoing
<input type="checkbox"/>	04/10/2019	Role of nitric oxide in anaphylactic shock in animal models, a systematic review [CRD42019132273]		Review Ongoing



SEARCH METHODOLOGY

THE FOUNDATION FOR MOST SRs AND MAs

A comprehensive, systematic search, with the aim to exhaust all available studies matching a specific research question and pre-set inclusion criteria

```
("Ampicillin Resistance"[Mesh] OR "Penicillin Resistance"[Mesh] OR "Tetracycline Resistance"[Mesh] OR "Drug Resistance, Bacterial"[Mesh] OR "Drug Resistance, Multiple, Bacterial"[Mesh] OR Resistan*[Title/Abstract]) AND ("H pylori"[Title/Abstract] OR "Helicobacter pylori"[Title/Abstract] OR "Helicobacter pylori"[Mesh] OR "Helicobacter Infections"[Title/Abstract] OR "Helicobacter Infection"[Title/Abstract] OR "Helicobacter Infections"[Mesh] OR "Campylobacter"[Mesh] OR Campylobacter [Title/Abstract]) AND (Rifabutin[Title/Abstract] OR Antibiotic*[Title/Abstract] OR Tinidazole[Title/Abstract] OR Doxycycline[Title/Abstract] OR Ampicillin[Title/Abstract] OR Moxifloxacin[Title/Abstract] OR Metronidazole[Title/Abstract] OR Clarithromycin[Title/Abstract] OR Levofloxacin[Title/Abstract] OR Amoxicillin[Title/Abstract] OR "combination capsules"[Title/Abstract] OR "combination capsule"[Title/Abstract] OR "Sequential therapy"[Title/Abstract] OR "Quad therapy"[Title/Abstract] OR "Quadruple therapy"[Title/Abstract] OR "Triple therapy"[Title/Abstract] OR Penicillin*[Title/Abstract] OR Macrolide*[Title/Abstract] OR Rifamycin*[Title/Abstract] OR Nitroimidazole*[Title/Abstract] OR Quinolone*[Title/Abstract] OR Tetracycline*[Title/Abstract] OR Quinolone*[Title/Abstract] OR "anti-bacterial agents"[Title/Abstract] OR "anti-bacterial agent"[Title/Abstract] OR amoxicillin[Title/Abstract] OR "Anti-Bacterial Agents"[Mesh] OR "Penicillins"[Mesh] OR "Macrolides"[Mesh] OR "Rifamycins"[Mesh] OR "Nitroimidazoles"[Mesh] OR "Quinolones"[Mesh] OR "Tetracyclines"[Mesh]) AND ("Republic of Cameroon"[Title/Abstract] OR "Africa"[Mesh] OR "Sub Sahara"[Title/Abstract] OR "Sub Saharan"[Title/Abstract] OR Angola [Title/Abstract] OR Benin [Title/Abstract] OR Botswana [Title/Abstract] OR "Burkina Faso"[Title/Abstract] OR Burundi [Title/Abstract] OR Cameroon[Title/Abstract] OR "Cape Verde"[Title/Abstract] OR Chad[Title/Abstract] OR Congo[Title/Abstract] OR "Côte d'Ivoire"[Title/Abstract] OR "Ivory Coast"[Title/Abstract] OR Djibouti[Title/Abstract] OR "Equatorial Guinea"[Title/Abstract] OR Eritrea[Title/Abstract] OR Ethiopia[Title/Abstract] OR Gabon*[Title/Abstract] OR Gambia[Title/Abstract] OR Ghana[Title/Abstract] OR Guinea[Title/Abstract] OR "Guinea Bissau"[Title/Abstract] OR Kenya[Title/Abstract] OR Lesotho[Title/Abstract] OR Liberia[Title/Abstract] OR Malawi[Title/Abstract] OR Mali[Title/Abstract] OR Mauritania[Title/Abstract] OR Mozambique[Title/Abstract] OR Namibia[Title/Abstract] OR Niger[Title/Abstract] OR Nigeria[Title/Abstract] OR Rwanda[Title/Abstract] OR Senegal[Title/Abstract] OR "Sierra Leone"[Title/Abstract] OR Somalia[Title/Abstract] OR Sudan [Title/Abstract] OR Swaziland[Title/Abstract] OR Tanzania[Title/Abstract] OR Togo[Title/Abstract] OR Uganda[Title/Abstract] OR Zambia[Title/Abstract] OR Zimbabwe[Title/Abstract] OR Africa*[Title/Abstract] OR "Togolese Republic"[Title/Abstract] OR "Burkina Fasso"[Title/Abstract] OR "Upper Volta"[Title/Abstract] OR Zaire[Title/Abstract])
```



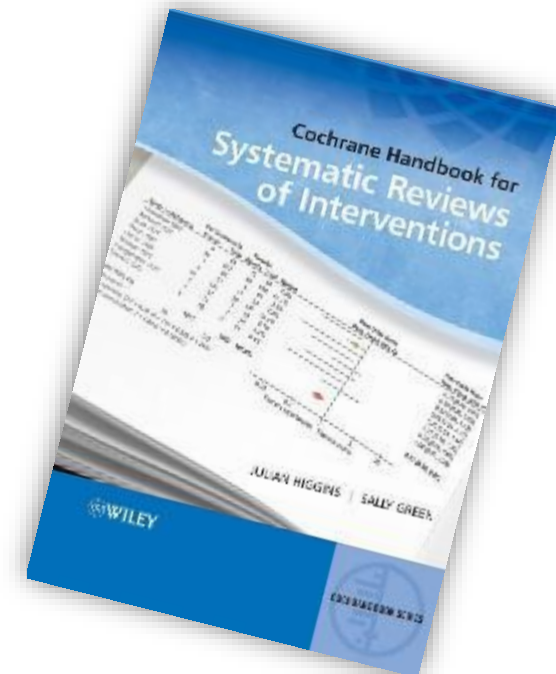
HIGH QUALITY SEARCH STRATEGIES

Requires:

- ❖ Time
- ❖ Advanced skills in information retrieval, search techniques and information resources
- ❖ Knowledge about medical terms and thesaurus/MeSH indexing
- ❖ Detailed search term inclusion and testing
- ❖ Analysis of the search process

THE SR TIMELINE

Month	Activity
1 – 2	Preparation of protocol
3 – 8	Searches for published and unpublished studies
2 – 3	Pilot test of eligibility criteria
3 – 8	Inclusion assessments
3	Pilot test “Risk of Bias” assessment
3 – 10	Validity assessments
3	Pilot test of data collection
3 – 10	Data collection
3 – 10	Data entry
5 – 11	Follow up of missing information
8 – 10	Analysis
1 – 11	Preparation of review report
12 -	Keeping the review up-to-date

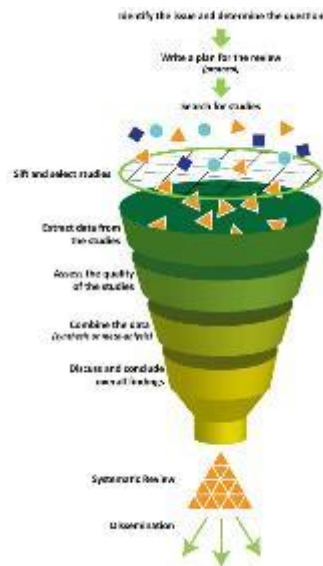


HIGH QUALITY SEARCH STRATEGIES

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- ❖ Analysis of the search process

THERE ARE NO GOOD POST-REPAIR SOLUTIONS FOR SYSTEMATIC SEARCHES



Small mistakes can lead to large variations

- ❖ 374 out of 1120 references missed due to the lack of one “OR” operator



```
((("weight reduction"[Title/Abstract] OR "weight management"[Title/Abstract] OR "weight control"[Title/Abstract] OR "weight reductions"[Title/Abstract] OR "weight loss"[Title/Abstract] OR "weight losses"[Title/Abstract] OR "Weight Loss"[Mesh])) AND (obesity[Title/Abstract] OR obese[Title/Abstract] OR obesities[Title/Abstract] OR "Obesity"[Mesh:NoExp] OR "Obesity, Abdominal"[Mesh] OR "Obesity, Metabolically Benign"[Mesh] OR "Obesity Hypoventilation Syndrome"[Mesh] OR "Obesity, Morbid"[Mesh] OR BMI[Title/Abstract] OR "body mass index"[Title/Abstract] OR "Body Mass Index"[Mesh] OR "Overweight"[Mesh:NoExp] OR overweight[Title/Abstract])) AND (T2D[Title/Abstract] OR "diabetes type II"[Title/Abstract] OR "type 2 diabetes"[Title/Abstract] OR "diabetes type 2"[Title/Abstract] OR T2DM[Title/Abstract] OR NIDDM[Title/Abstract] OR "diabetes mellitus, noninsulin-dependent"[Title/Abstract] OR "diabetes mellitus, non-Insulin-dependent"[Title/Abstract] OR "non-insulin-dependent diabetes mellitus"[Title/Abstract] OR "diabetes mellitus, noninsulin dependent"[Title/Abstract] OR "diabetes mellitus, non insulin dependent"[Title/Abstract] OR "diabetes mellitus, type II"[Title/Abstract] OR "noninsulin-dependent diabetes mellitus"[Title/Abstract] OR "diabetes mellitus type 2"[Title/Abstract] OR diabetes[Title/Abstract] OR "Diabetes Mellitus, Type 2"[Mesh:NoExp])) AND (("Costs and Cost Analysis"[Mesh] OR "Cost Savings"[Mesh] OR "Economics"[Mesh] OR "Health Care Costs"[Mesh] OR "Hospital Costs"[Mesh] OR "Health Expenditures"[Mesh] OR economic*[Title/Abstract] OR cost[Title/Abstract] OR costs[Title/Abstract] OR "Economics, Medical"[Mesh:NoExp] OR "burden of illness"[Title/Abstract] OR "Illness Burden"[Title/Abstract] OR utility[Title/Abstract] OR "life years"[Title/Abstract] OR "quality-adjusted life years"[Title/Abstract] OR "disability adjusted life years"[Title/Abstract] OR "cost-benefit analysis"[Title/Abstract] OR "cost-effectiveness analysis"[Title/Abstract] OR "cost-utility analysis"[Title/Abstract] OR "economic evaluation"[Title/Abstract] OR expenditure*[Title/Abstract] OR "illness Burdens"[Title/Abstract] OR "Models, Economic"[Mesh] OR "Cost of Illness"[Mesh]))
```

PEER REVIEW OF THE SEARCH STRING BEFORE SUBMITTING

PRESS

Evidence- based checklist for systematic searches

Link: <https://www.cadth.ca>

Translation of the research question	<ul style="list-style-type: none">• Does the search strategy match the research question/PICO?• Are the search concepts clear?• Are there too many or too few PICO elements included?• Are the search concepts too narrow or too broad?• Does the search retrieve too many or too few records? (Please show number of hits per line.)• Are unconventional or complex strategies explained?
Boolean and proximity operators (these vary based on search service)	<ul style="list-style-type: none">• Are Boolean or proximity operators used correctly?• Is the use of nesting with brackets appropriate and effective for the search?• If NOT is used, is this likely to result in any unintended exclusions?• Could precision be improved by using proximity operators (e.g., adjacent, near, within) or phrase-searching instead of AND?• Is the width of proximity operators suitable (e.g., might adj5 pick up more variants than adj2)?
Subject headings (database-specific)	<ul style="list-style-type: none">• Are the subject headings relevant?• Are any relevant subject headings missing; e.g., previous index terms?• Are any subject headings too broad or too narrow?• Are subject headings exploded where necessary and vice versa?• Are major headings ("starring" or restrict to focus) used? If so, is there adequate justification?• Are subheadings missing?• Are subheadings attached to subject headings? (Floating subheadings may be preferred.)• Are floating subheadings relevant and used appropriately?• Are both subject headings and terms in free text (see below) used for each concept?

SEARCH METHODOLOGY AND QUALITY IMPACT

- ❖ The search in many SRs and MAs are still of poor quality and includes a very high percentage (up to 93%) of search technical errors (Golder, Loke, & Zorzela, 2013; Grossetta et al. 2019; Koffel & Rethlefsen, 2016; Opheim et al. 2019; Rethlefsen et al. 2015; Salvador-Oliván et al. 2019)
- ❖ Close connection between the quality of the search and method documentation and the quality and risk of bias of SRs and MAs (Golder, Loke, & Zorzela, 2013; Peters et al. 2015; Rethlefsen, Murad, & Livingston, 2014)
- ❖ Poor search documentation and lack of method transparency reduces usefulness of SRs and MAs in evidence based clinical settings (Golder, Loke, & McIntosh, 2008; Knehans, Dell & Robinson, 2016 Peters et al. 2015)

A SYSTEMATIC APPROACH

(("Ampicillin Resistance"[Mesh] OR "Penicillin Resistance"[Mesh] OR "Tetracycline Resistance"[Mesh] OR "Drug Resistance, Bacterial"[Mesh] OR "Drug Resistance, Multiple, Bacterial"[Mesh] OR Resistan*[Title/Abstract]) AND ("H pylori"[Title/Abstract] OR "Helicobacter pylori"[Title/Abstract] OR "Helicobacter pylori"[Mesh] OR "Helicobacter Infections"[Title/Abstract] OR "Helicobacter Infection"[Title/Abstract] OR "Helicobacter Infections"[Mesh] OR "Campylobacter"[Mesh] OR Campylobacter [Title/Abstract]) AND (Rifabutin[Title/Abstract] OR Antibiotic*[Title/Abstract] OR Tinidazole[Title/Abstract] OR Doxycycline[Title/Abstract] OR Ampicillin[Title/Abstract] OR Moxifloxacin[Title/Abstract] OR Metronidazole[Title/Abstract] OR Clarithromycin[Title/Abstract] OR Levofloxacin[Title/Abstract] OR Amoxicillin[Title/Abstract] OR "combination capsules"[Title/Abstract] OR "combination capsule"[Title/Abstract] OR "Sequential therapy"[Title/Abstract] OR "Quad therapy"[Title/Abstract] OR "Quadruple therapy"[Title/Abstract] OR "Triple therapy"[Title/Abstract] OR Penicillin*[Title/Abstract] OR Macrolide*[Title/Abstract] OR Rifamycin*[Title/Abstract] OR Nitroimidazole*[Title/Abstract] OR Quinolone*[Title/Abstract] OR Tetracycline*[Title/Abstract] OR Quinolone*[Title/Abstract] OR "anti-bacterial agents"[Title/Abstract] OR "anti-bacterial agent"[Title/Abstract] OR amoxicillin[Title/Abstract] OR "Anti-Bacterial Agents"[Mesh] OR "Penicillins"[Mesh] OR "Macrolides"[Mesh] OR "Rifamycins"[Mesh] OR "Nitroimidazoles"[Mesh] OR "Quinolones"[Mesh] OR "Tetracyclines"[Mesh]) AND ("Republic of Cameroon"[Title/Abstract] OR "Africa"[Mesh] OR "Sub Sahara"[Title/Abstract] OR "Sub Saharan"[Title/Abstract] OR Angola [Title/Abstract] OR Benin [Title/Abstract] OR Botswana [Title/Abstract] OR "Burkina Faso"[Title/Abstract] OR Burundi [Title/Abstract] OR Cameroon[Title/Abstract] OR "Cape Verde"[Title/Abstract] OR Chad[Title/Abstract] OR Congo[Title/Abstract] OR "Côte d'Ivoire"[Title/Abstract] OR "Ivory Coast"[Title/Abstract] OR Djibouti[Title/Abstract] OR "Equatorial Guinea"[Title/Abstract] OR Eritrea[Title/Abstract] OR Ethiopia[Title/Abstract] OR Gabon*[Title/Abstract] OR Gambia[Title/Abstract] OR Ghana[Title/Abstract] OR Guinea[Title/Abstract] OR "Guinea Bissau"[Title/Abstract] OR Kenya[Title/Abstract] OR Lesotho[Title/Abstract] OR Liberia[Title/Abstract] OR Malawi[Title/Abstract] OR Mali[Title/Abstract] OR Mauritania[Title/Abstract] OR Mozambique[Title/Abstract] OR Namibia[Title/Abstract] OR Niger[Title/Abstract] OR Nigeria[Title/Abstract] OR Rwanda[Title/Abstract] OR Senegal[Title/Abstract] OR "Sierra Leone"[Title/Abstract] OR Somalia[Title/Abstract] OR Sudan [Title/Abstract] OR Swaziland[Title/Abstract] OR Tanzania[Title/Abstract] OR Togo[Title/Abstract] OR Uganda[Title/Abstract] OR Zambia[Title/Abstract] OR Zimbabwe[Title/Abstract] OR Africa*[Title/Abstract] OR "Togolese Republic"[Title/Abstract] OR "Burkina Fasso"[Title/Abstract] OR "Upper Volta"[Title/Abstract] OR Zaire[Title/Abstract]))



SYSTEMATIC REVIEW SEARCH

“H-PYLORI AND ANTIBIOTIC RESISTANCE IN
SUB-SAHARA, 1992-”



PubMed

"h-pylori" AND "antibiotic resistance" AND "sub sahara"



Search

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- Free full text
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- 5 years
- 10 years
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Species

- Humans
- Other Animals

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Items: 0

No documents match your search terms

Search details

"h-pylori"[All Fields] AND "antibiotic resistance"[All Fields] AND "sub sahara"[All Fields]

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"h-pylori" AND "antibiotic resistance" AND "sub sahara" (0) PubMed

United Arab Emirates MeSH

United arab emirates (1) MeSH

child (2023590) PubMed

child* (2456251) PubMed

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COUNTRY NAMES IN SUB SAHARA 1992- BASED ON PubMed's MeSH



Djibouti	a. Somaliland, French b. Republic of Djibouti c. French Somaliland	a. Not relevant b. Searched by "Djibouti" c. Not relevant
Democratic republic of Congo (Searched by "Congo")	a. Congo (Kinshasa) b. Zaire c. Belgian Congo d. Katanga	a. Searched by "Congo" b. Included c. Searched by "Congo" d. Not relevant
Egypt	a. Arab Republic of Egypt b. United Arab Republic	a. Searched by "Egypt" b. Not relevant
Equatorial Guinea (Searched by "Guinea")	a. Republic of Equatorial Guinea b. Spanish Guinea c. Guinea, Spanish d. Rio Muni	a. Searched by "Equatorial Guinea" b. Not relevant c. Not relevant d. Not relevant
Eritrea	N/A	
Ethiopia	Federal Democratic Republic of Ethiopia	Searched by "Ethiopia"
Gabon	Gabonese Republic	Searched by "Gabon*"
Gambia	Republic of the Gambia	Searched by "Gambia"
Ghana	a. Republic of Ghana b. Gold Cost	a. Searched by "Ghana" b. Not relevant
Guinea	a. Guinea, French b. Republic of Guinea c. French Guinea d. Guinea, Republic of	a. Searched by "Guinea" b. Searched by "Guinea" c. Searched by "Guinea" d. Searched by "Guinea"
Guinea-Bissau	a. Republic of Guinea-Bissau b. Portuguese Guinea c. Guinea, Portuguese d. Guinea-Bissau, Republic of	a. Searched by "Guinea-Bissau" b. Searched by "Guinea" c. Searched by "Guinea" d. Searched by "Guinea-Bissau"
Kenya	Republic of Kenya	Searched by "Kenya"
Lesotho	a. Basutoland b. Kingdom of Lesotho	a. Not relevant b. Searched by "Lesotho"
Liberia	Republic of Liberia	Searched by "Liberia"
Libya	N/A	
Malawi	a. Republic of Malawi b. Nyasaland	a. Searched by "Malawi" b. Not relevant
Mali	Republic of Mali	Searched by "Mali"
Mauritania	N/A	
Morocco	Ifni	Not relevant
Mozambique	a. Republic of Mozambique	a. Searched by "Mozambique"

MeSH

MeSH

equatorial guinea

Search

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Equatorial Guinea

A republic in central Africa, bordering the Bay of Biafra, CAMEROON is to the north and GABON to the south. Its capital is Malabo.
Year introduced: 1992

PubMed search builder options

[Subheadings:](#)

epidemiology ethnology statistics and numerical data

- Restrict to MeSH Major Topic.
- Do not include MeSH terms found below this term in the MeSH hierarchy.

Tree Number(s): Z01.058.290.100.300

MeSH Unique ID: D016703

Entry Terms:

- Republic of Equatorial Guinea
- Spanish Guinea
- Guinea, Spanish
- Rio Muni

Previous Indexing:

- [Africa, Central \(1966-1991\)](#)

[All MeSH Categories](#)

[Geographical Locations Category](#)

[Geographic Locations](#)

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[Africa South of the Sahara](#)

[Africa, Central](#)

Equatorial Guinea

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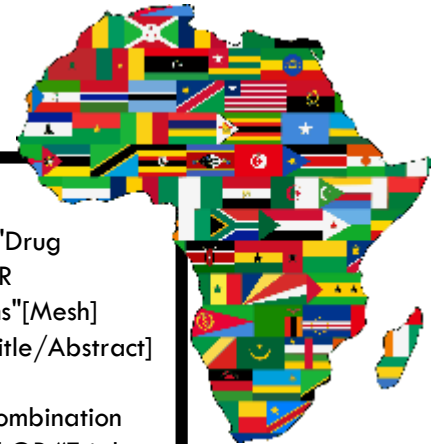
[NLM MeSH Browser](#)

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- equatorial guinea (1) MeSH
- Equatorial Guinea MeSH
- Congo MeSH
- congo (7) MeSH
- h pylori jaka ostlundh (1) PubMed

H-PYLORI AND ANTIBIOTIC RESISTANCE IN SUB SAHARA



(("Ampicillin Resistance"[Mesh] OR "Penicillin Resistance"[Mesh] OR "Tetracycline Resistance"[Mesh] OR "Drug Resistance, Bacterial"[Mesh] OR "Drug Resistance, Multiple, Bacterial"[Mesh] OR Resistan*[Title/Abstract]) AND ("H pylori"[Title/Abstract] OR "Helicobacter pylori"[Title/Abstract] OR "Helicobacter pylori"[Mesh] OR "Helicobacter Infections"[Title/Abstract] OR "Helicobacter Infection"[Title/Abstract] OR "Helicobacter Infections"[Mesh] OR "Campylobacter"[Mesh] OR Campylobacter [Title/Abstract]) AND (Rifabutin[Title/Abstract] OR Antibiotic*[Title/Abstract] OR Tinidazole[Title/Abstract] OR Doxycycline[Title/Abstract] OR Ampicillin[Title/Abstract] OR Moxifloxacin[Title/Abstract] OR Metronidazole[Title/Abstract] OR Clarithromycin[Title/Abstract] OR Levofloxacin[Title/Abstract] OR Amoxicillin[Title/Abstract] OR "combination capsules"[Title/Abstract] OR "combination capsule"[Title/Abstract] OR "Sequential therapy"[Title/Abstract] OR "Quad therapy"[Title/Abstract] OR "Quadruple therapy"[Title/Abstract] OR "Triple therapy"[Title/Abstract] OR Penicillin*[Title/Abstract] OR Macrolide*[Title/Abstract] OR Rifamycin*[Title/Abstract] OR Nitroimidazole*[Title/Abstract] OR Quinolone*[Title/Abstract] OR Tetracycline*[Title/Abstract] OR Quinolone*[Title/Abstract] OR "anti-bacterial agents"[Title/Abstract] OR "anti-bacterial agent"[Title/Abstract] OR amoxicillin[Title/Abstract] OR "Anti-Bacterial Agents"[Mesh] OR "Penicillins"[Mesh] OR "Macrolides"[Mesh] OR "Rifamycins"[Mesh] OR "Nitroimidazoles"[Mesh] OR "Quinolones"[Mesh] OR "Tetracyclines"[Mesh]) AND ("Republic of Cameroon"[Title/Abstract] OR "Africa"[Mesh] OR "Sub Sahara"[Title/Abstract] OR "Sub Saharan"[Title/Abstract] OR Angola [Title/Abstract] OR Benin [Title/Abstract] OR Botswana [Title/Abstract] OR "Burkina Faso"[Title/Abstract] OR Burundi [Title/Abstract] OR Cameroon[Title/Abstract] OR "Cape Verde"[Title/Abstract] OR Chad[Title/Abstract] OR Congo[Title/Abstract] OR "Côte d'Ivoire"[Title/Abstract] OR "Ivory Coast"[Title/Abstract] OR Djibouti[Title/Abstract] OR "Equatorial Guinea"[Title/Abstract] OR Eritrea[Title/Abstract] OR Ethiopia[Title/Abstract] OR Gabon*[Title/Abstract] OR Gambia[Title/Abstract] OR Ghana[Title/Abstract] OR Guinea[Title/Abstract] OR "Guinea Bissau"[Title/Abstract] OR Kenya[Title/Abstract] OR Lesotho[Title/Abstract] OR Liberia[Title/Abstract] OR Malawi[Title/Abstract] OR Mali[Title/Abstract] OR Mauritania[Title/Abstract] OR Mozambique[Title/Abstract] OR Namibia[Title/Abstract] OR Niger[Title/Abstract] OR Nigeria[Title/Abstract] OR Rwanda[Title/Abstract] OR Senegal[Title/Abstract] OR "Sierra Leone"[Title/Abstract] OR Somalia[Title/Abstract] OR Sudan [Title/Abstract] OR Swaziland[Title/Abstract] OR Tanzania[Title/Abstract] OR Togo[Title/Abstract] OR Uganda[Title/Abstract] OR Zambia[Title/Abstract] OR Zimbabwe[Title/Abstract] OR Africa*[Title/Abstract] OR "Togolese Republic"[Title/Abstract] OR "Burkina Fasso"[Title/Abstract] OR "Upper Volta"[Title/Abstract] OR Zaire[Title/Abstract]))

Article types
Clinical Trial
Review
Customize ...

Text availability
Abstract
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5 years
10 years
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Species
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Search results

Items: 1 to 20 of 125

<< First < Prev Page 1 of 7 Next > Last >>

- 1. [Identification and antimicrobial resistance patterns of bacterial enteropathogens from children aged 0-59 months at the University Teaching Hospital, Lusaka, Zambia: a prospective cross sectional study.](#)
Chiyangi H, Muma JB, Malama S, Manyahi J, Abade A, Kwenda G, Matee MI.
BMC Infect Dis. 2017 Feb 2;17(1):117. doi: 10.1186/s12879-017-2232-0.
PMID: 28152988 **Free PMC Article**
[Similar articles](#)
- 2. [Antibiotic Resistance of <i>Campylobacter</i> Recovered from Faeces and Carcasses of Healthy Livestock.](#)
Karikari AB, Obiri-Danso K, Frimpong EH, Krogfelt KA.
Biomed Res Int. 2017;2017:4091856. doi: 10.1155/2017/4091856.
PMID: 28194411 **Free PMC Article**
[Similar articles](#)
- 3. [Antibiotic resistance profiles of Campylobacter species in the South Africa private health care sector.](#)
Shobo CO, Bester LA, Baijnath S, Somboro AM, Peer AK, Essack SY.
J Infect Dev Ctries. 2016 Nov 24;10(11):1214-1221. doi: 10.3855/jidc.8165.
PMID: 27886034 **Free Article**
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- 4. [Identification and functional analysis of two toxin-antitoxin systems in Campylobacter jejuni.](#)
Shen Z, Patil RD, Sahin O, Wu Z, Pu XY, Dai L, Plummer PJ, Yaeger MJ, Zhang Q.
Mol Microbiol. 2016 Sep;101(6):909-23. doi: 10.1111/mmi.13431.
PMID: 27291507
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- 5. [Antimicrobial resistance of Campylobacter isolates from small scale and backyard chicken in Kenya.](#)
Nguyen TN, Hotzel H, Njeru J, Mwituria J, El-Adawy H, Tomaso H, Neubauer H, Hafez HM.
Gut Pathog. 2016 Aug 27;8(1):39. doi: 10.1186/s13099-016-0121-5.
PMID: 27570543 **Free PMC Article**
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Titles with your search terms

- Association between cagA, vacA, and dupA genes of Helicobacter [Folia Microbiol (Praha). 2017]
- Enhancement of adherence of Helicobacter pylori to host cells by vi [Med Mol Morphol. 2017]
- A Quantitative Real-Time PCR Approach for Assessing Campylobacter jej [J Food Prot. 2017]

See more...

("Ampicillin Resistance" [Mesh] OR "Penicillin Resistance" [Mesh] OR "Tetracycline

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- Abstract
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- 10 years
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- Other Animals

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- [Hb Hubei \[α114\(GH2\)Pro→His, HBA1: c.344C>A\]: A Novel Hemoglobin Variant of the α1-Globin Chain.](#)
Xu AP, Li J, Chen WD, Zhou Y, Ji L.
Hemoglobin. 2018 Oct 2:1-3. doi: 10.1080/03630269.2018.1502197. [Epub ahead of print]
PMID: 30277418
[Similar articles](#)
- [Third-line Drugs for Type 2 Diabetes — Project Protocol \[Internet\].](#)
Ottawa (ON): Canadian Agency for Drugs and Technologies in Health; 2017 Aug 22.
PMID: 30234937 **Free Books & Documents**
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- [Influence of iron deficiency on Hb A1c levels in type 2 diabetic patients.](#)
Urrechaga E.
Diabetes Metab Syndr. 2018 Nov;12(6):1051-1055. doi: 10.1016/j.dsx.2018.06.024. Epub 2018 Jun 30.
PMID: 30042079
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- Titles with your search terms
- Hb Moncloa:** A new variant of haemoglobin that interferes in the quantificatic [Clin Biochem. 2017]
 - Impact of Mean Cell Hemoglobin on **Hb A1c**-Defined Glycemia Status. [Clin Chem. 2016]
 - Hb A_{1c}** Determination by Capillary Electrophoresis is an Efficient [Hemoglobin. 2016]

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Search	Add to builder	Query	Items found	Time
#21	Add	Search ((((((((((T2DM [Title/Abstract]) OR "Non-Insulin-Dependent Diabetes Mellitus" [Title/Abstract]) OR "NIDDM"[Title/Abstract]) OR "Non insulin dependent diabetes"[Title/Abstract]) OR "diabetes mellitus type II"[Title/Abstract]) OR "type II diabetes mellitus"[Title/Abstract]) OR "type II diabetes"[Title/Abstract]) OR "diabetes type II"[Title/Abstract]) OR "diabetes mellitus type 2"[Title/Abstract]) OR "Type 2 diabetes mellitus"[Title/Abstract]) OR "Type 2 diabetes"[Title/Abstract]) OR "Diabetes type 2"[Title/Abstract] Sort by: PublicationDate	110643	05:44:23
#20	Add	Search T2DM [Title/Abstract] Sort by: PublicationDate	11960	05:43:34
#19	Add	Search "Non-Insulin-Dependent Diabetes Mellitus" [Title/Abstract] Sort by: PublicationDate	6765	05:43:08
#18	Add	Search "NIDDM"[Title/Abstract] Sort by: PublicationDate	6866	05:42:34
#17	Add	Search "Non insulin dependent diabetes"[Title/Abstract] Sort by: PublicationDate	8517	05:42:00
#16	Add	Search "diabetes mellitus type II"[Title/Abstract] Sort by: PublicationDate	442	05:41:35
#15	Add	Search "type II diabetes mellitus"[Title/Abstract] Sort by: PublicationDate	2279	05:41:07
#14	Add	Search "type II diabetes"[Title/Abstract] Sort by: PublicationDate	6921	05:40:33
#13	Add	Search "diabetes type II"[Title/Abstract] Sort by: PublicationDate	257	05:40:00
#12	Add	Search "diabetes mellitus type 2"[Title/Abstract] Sort by: PublicationDate	1894	05:39:39
#11	Add	Search "Type 2 diabetes mellitus"[Title/Abstract] Sort by: PublicationDate	30724	05:39:14
#10	Add	Search "Type 2 diabetes"[Title/Abstract] Sort by: PublicationDate	91136	05:38:52
#9	Add	Search "Diabetes type 2"[Title/Abstract] Sort by: PublicationDate	827	05:38:16



THE SYSTEMATIC SEARCH PROCESS

- ❖ Pre- search to test and identify:
 - Search terms
 - Search strategy
 - Resources
- ❖ Systematic developing and testing the search in one selected database
- ❖ Translate the search to all selected databases
- ❖ Update the search

A hand in a dark suit jacket holds a magnifying glass over a glowing blue network of nodes and lines. The network is composed of numerous small, bright blue spheres connected by thin, glowing lines, creating a complex web. The background is dark blue with vertical lines and some faint, glowing elements. The overall scene suggests a focus on search, investigation, and technology.

SEARCH STRATEGIES AND SEARCH TECHNIQUES

RULE NO. 1: KEEP IT “SIMPLE”

Search one term at the time and concentrate on search term inclusion, combinations and process analysis rather than database functions



FOCUS ON THE SEARCH TERMS

Is there a relation between diabetes type 2 in children and food habits			
Type 2 diabetes	Food	Exercise	Health information
Diabetes type 2	Food intake	Sport	Patient education
Type 2 diabetes	Nutrition	Activity	Patient learning
Diabetes Mellitus type 2	Malnutrition	Physical activity	Health education
Non insulin dependent diabetes	Eating	Fitness	
NIDDM	Diet	Running	
Diabetes Mellitus type II	Dieting	Swimming	

Advanced vs Basic Search

Basic search:

- PubMed interprets your search= **low precision**
- Limited search functions

Advanced search:

- You have full control over the search= **high precision**
- Advanced search functions available including search history and field search



Search Example

Nursing



Use the builder below to create your search

[Edit](#)

[Clear](#)

Builder

All Fields ▼



[Show index list](#)

AND ▼

All Fields ▼



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Search

or [Add to history](#)

History

[Download history](#) [Clear history](#)

Search	Add to builder	Query	Items found	Time
#2	Add	Search nursing [Title/Abstract]	261168	03:37:34
#1	Add	Search nursing	759154	03:37:06

SEARCH TECHNIQUES

- ❖ **Truncation** (Child* = child, children, children's...)
- ❖ **Phrasing** ("myocardial infarction")
- ❖ **Field search** (Title, Abstract, MeSH)
- ❖ **Boolean operators** (AND, OR, NOT)
- ❖ **Search history** (helps you structure and combine)

SEARCH EXAMPLE: ANIMAL

NCBI Resources How To Sign in to NCBI

PubMed animal*[Title/Abstract] Search

US National Library of Medicine National Institutes of Health Create RSS Create alert Advanced Help

Article types: Clinical Trial, Review, Customize ...

Text availability: Abstract, Free full text, Full text

Publication dates: 5 years, 10 years, Custom range...

Species: Humans, Other Animals

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Search results

Items: 1 to 20 of 1067481 << First < Prev Page 1 of 53375 Next > Last >>

1. [Schwann Cells as Crucial Players in Diabetic Neuropathy](#)
Naruse K.
Adv Exp Med Biol. 2019;1190:345-356. doi: 10.1007/978-981-32-9636-7_22.
PMID: 31760655
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2. [Intracerebroventricular Delivery of Human Umbilical Cord Mesenchymal Stem Cells as a Promising Therapy for Repairing the Spinal Cord Injury Induced by Kainic Acid](#)
Nishida F, Zappa Villar MF, Zanuzzi CN, Sisti MS, Camiña AE, Reggiani PC, Portiansky EL.
Stem Cell Rev Rep. 2019 Nov 23. doi: 10.1007/s12015-019-09934-y. [Epub ahead of print]
PMID: 31760626
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3. [Problem-solving in a cooperative task in peach-fronted conures \(Eupsittula aurea\)](#)
Torres Ortiz S, Corregidor Castro A, Balsby TJS, Larsen ON.
Anim Cogn. 2019 Nov 23. doi: 10.1007/s10071-019-01331-9. [Epub ahead of print]
PMID: 31760558
[Similar articles](#)

4. [Epidemiological survey and risk factor analysis on Eimeria infections in calves and young cattle up to 1 year old in Colombia](#)
Lopez-Osonio S, Villar D, Failing K, Taubert A, Hermosilla C, Chaparro-Gutierrez JJ.
Parasitol Res. 2019 Nov 23. doi: 10.1007/s00436-019-06481-w. [Epub ahead of print]
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animal[Title/Abstract] OR
animal'[Title/Abstract] OR
animal's[Title/Abstract] OR
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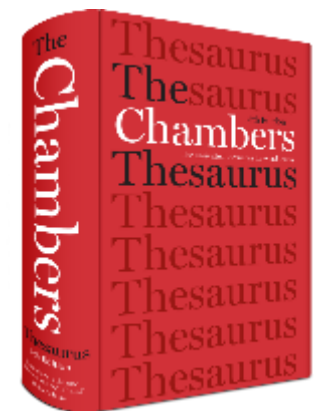
OPTIMIZE YOUR SEARCH BY COMBINING TI/AB AND MESH


History

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Search	Add to builder	Query	Items found	Time
#9	Add	Search ("Helicobacter Infections"[Title/Abstract]) OR "Helicobacter Infection"[Title/Abstract]) OR "Helicobacter Infections"[Mesh] Sort by: Title	29081	04:37:17
#8	Add	Search "Helicobacter Infections"[Mesh] Sort by: Title	28977	04:36:54
#6	Add	Search "Helicobacter Infection"[Title/Abstract] Sort by: Title	439	04:36:15
#5	Add	Search "Helicobacter Infections"[Title/Abstract] Sort by: Title	110	04:36:06

MeSH/Thesaurus terms can take 2 months or more to appear in the database



A close-up, slightly blurred photograph of a stack of books. The spines of the books are visible, with some text like 'UNIVERSITY OF MARYLAND' and 'UNIVERSITY OF MARYLAND' partially legible. The books are stacked in a way that creates a sense of depth and volume. A dark, semi-transparent rectangular overlay is positioned on the left side of the image, containing white text.

**IDENTIFYING
RELEVANT
INFORMATION
RESOURCES**

INFORMATION RESOURCES: SOME EXAMPLES

Medical databases

- ❖ PubMed
- ❖ Medline
- ❖ Cochrane
- ❖ Embase
- ❖ Scopus
- ❖ SciencDirect
- ❖ Web of Science

Other databases

- ❖ CINAHL
- ❖ Psych Info/Psych Articles
- ❖ Africa Wide Information
- ❖ Academic Search Complete
- ❖ Eric
- ❖ EconLit
- ❖ SocIndex

GREY LITERATURE

- Conference papers/conference proceedings
- E-prints
- Fact sheets, bulletins
- Government documents
- Government reports
- Informal communication
- Interviews
- Newsletters
- Pamphlets
- Blogs
- Patents
- Policy statements
- Reports
- Research Data
- Research reports
- Surveys
- Theses
- Tweets
- Working papers
- ...and more



HAND SEARCHING AND REFERENCE SCREENING

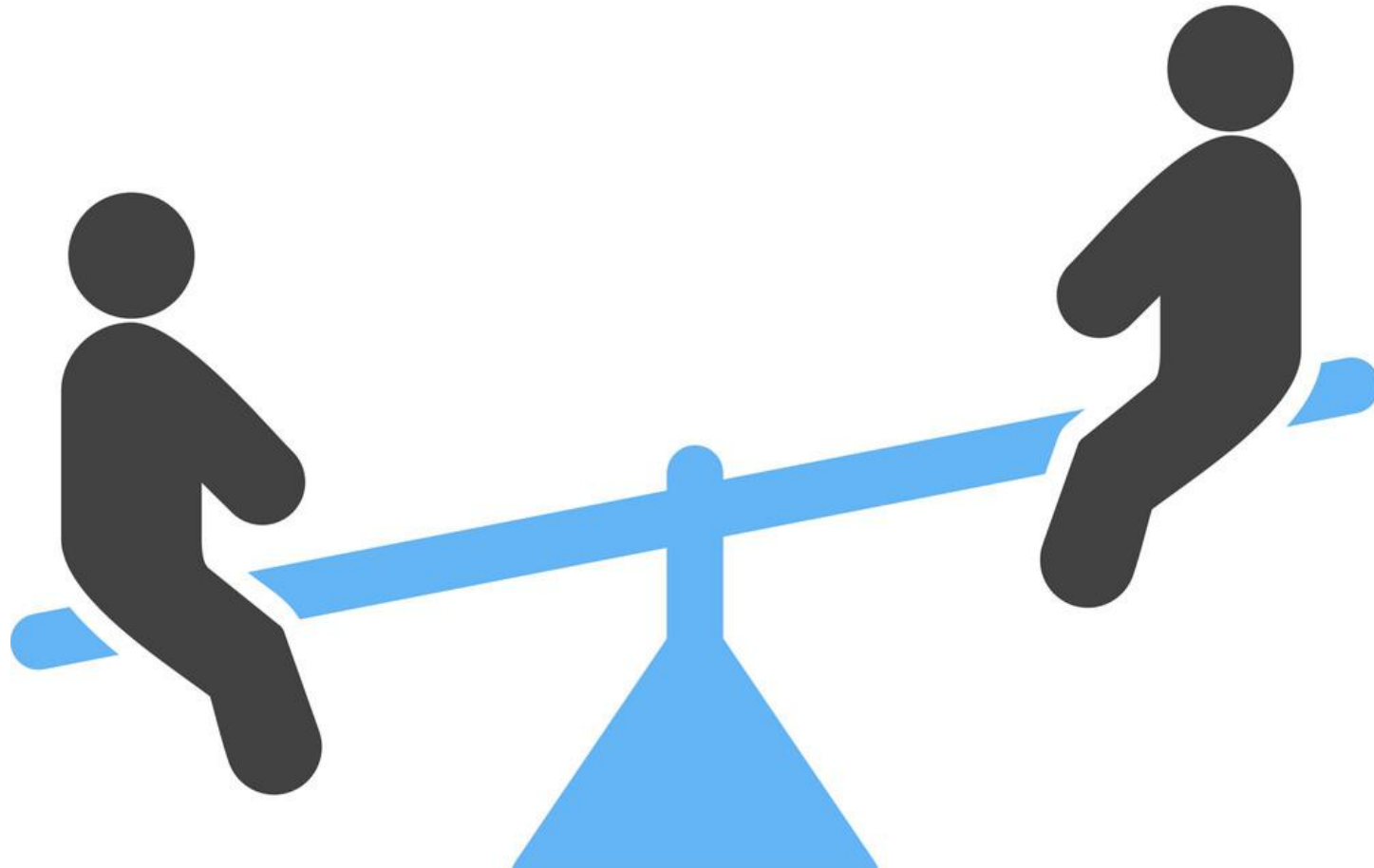
- ❖ Screening of references in identified articles
- ❖ Screening of archived/printed materials or conference abstracts.
- ❖ Make sure to systematically conduct and document the hand screening in the **methodology** (method, inclusion, number of references screened and and result)



INCLUDE A VARIETY OF INFORMATION RESOURCES

Examples of systematic reviews	Is the current HbA1c level of 6.5% for diabetes diagnosis too high	Systematic review and meta-analysis on the effect of soy on thyroid function	The association between boarding in the emergency department and in-hospital mortality	Cost-effectiveness of non-surgical weight loss interventions for diabetic obese patients	A systematic review to assess the relationship between sleep duration and mood in adolescents
PubMed result	4916	1501	1451	518	781
Result from additional databases included	7880	3424	6242	1157	1381
Total no. of references after de-duplication	9324	1816	4321	1120	1532
% of total no. of references not covered by PubMed	47,3%	17,3 %	66,4%	53,7%	49%

COMPREHENSIVENESS VS UP-TO-DATE



GOOGLE SCHOLAR FOR SYSTEMATIC REVIEWS?

- ❖ Great for pre and post search scanning
- ❖ Lacks proper search tools
- ❖ Generates too many (irrelevant) references – a lot to screen
- ❖ A good search in selected databases should cover all relevant information available in Google Scholar
- ❖ Includes more predatory journals



INVOLVING A MEDICAL LIBRARIAN

- ❖ Guidelines like IOM and the Cochrane's Handbook recommends that a professional medical librarian develops the search strategy and preforms and document the search process
- ❖ SRs and MAs with a librarian included as a co- author, are generally of higher quality (search and documentation) compared to studies only supported by a librarian or without a librarian's involvement (Meert & Costella, 2016; Rethlefsen et al., 2015)
- ❖ Reduces the risk of bias



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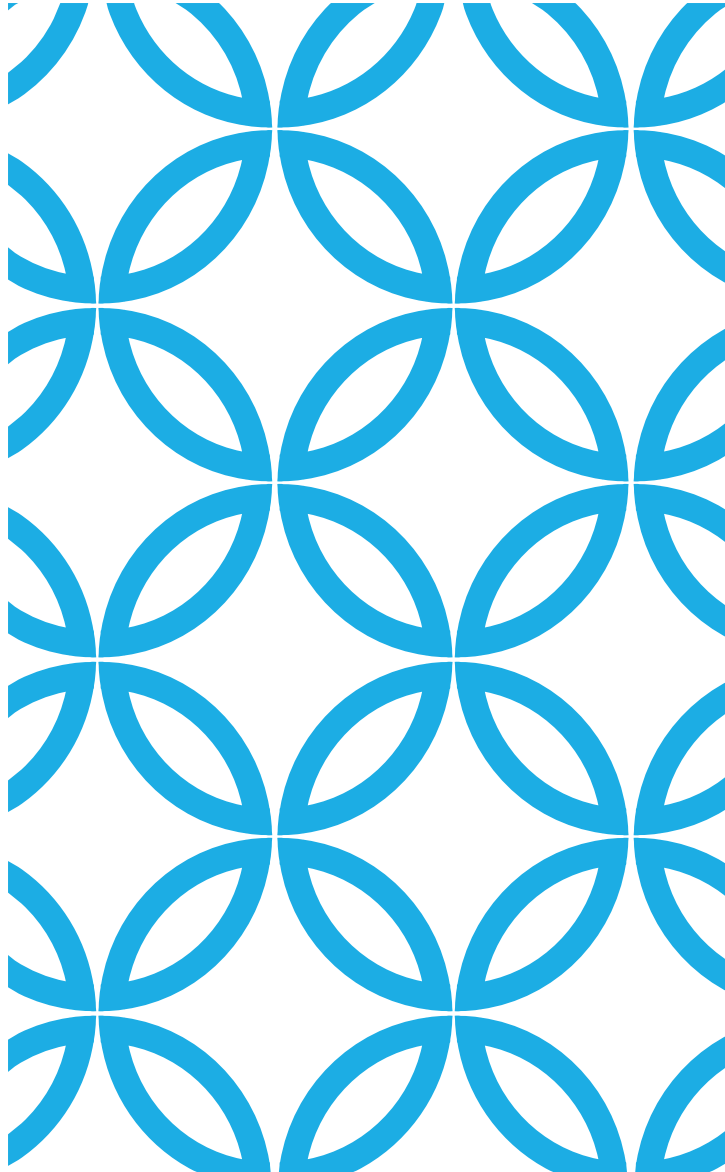
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THANK YOU

Linda Östlundh
lostlundh@uaeu.ac.ae