



ELSEVIER

How Embase can support systematic reviews

Piotr Golkiewicz
Customer Consultant
Central Eastern Europe
Elsevier Life Sciences
p.golkiewicz@elsevier.com



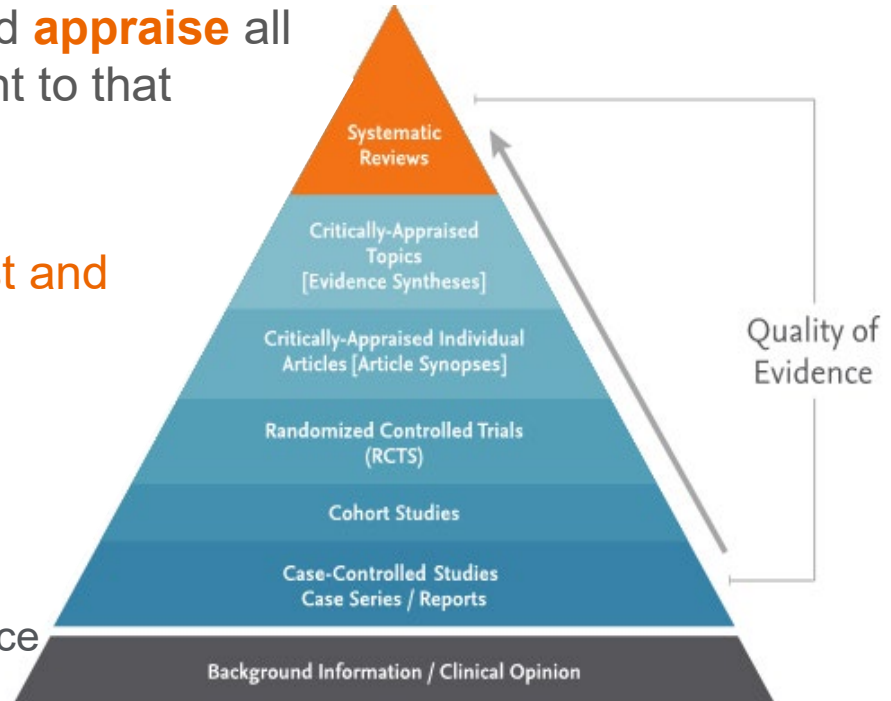
What is systematic review

It is a high-level overview of primary research that tries to **find**, **evaluate**, **synthesize** and **appraise** all high-quality research evidence relevant to that question.

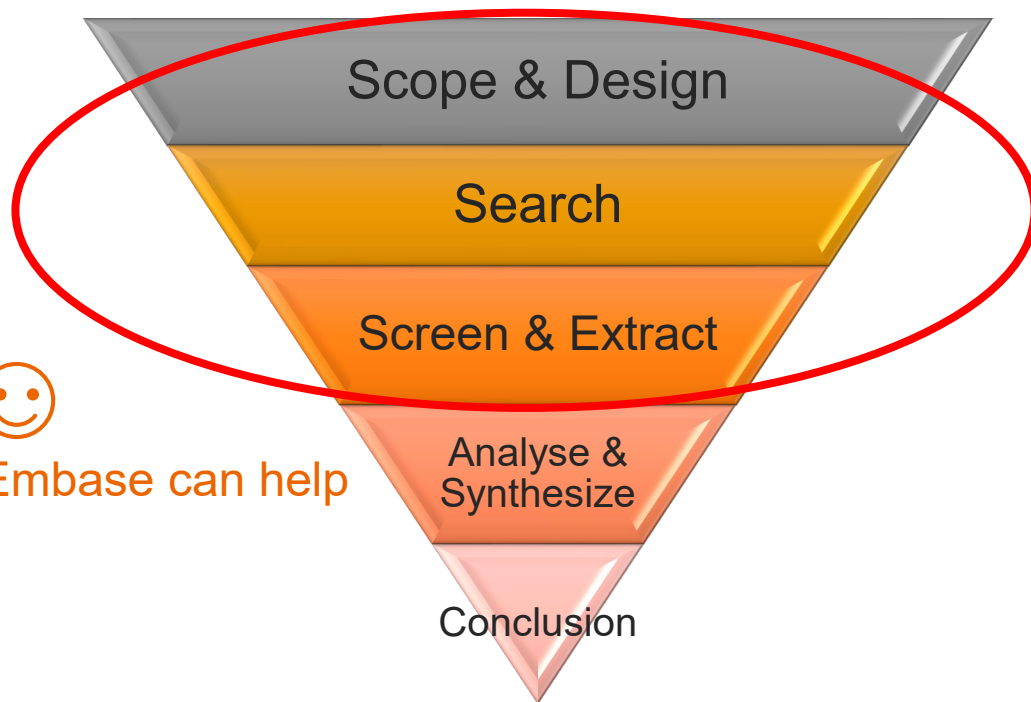
It is considered as **the strongest and highest quality** of evidence.

Why is it important?

- ✓ Answer a specific clinical question
- ✓ Provide comprehensive view of evidence
- ✓ Minimize bias
- ✓ Identify research gaps



The systematic review process



Identify the specific question, and define the search strategy also criteria (e.g. population, intervention type)

Run the searches in the database

Screen all obtained results, and segregate the relevant ones out

Analyse the results and synthesize a summary

Conclude the overall findings



Embase can help



Systematic Reviews

What is Embase?



Content and Coverage



Embase
Over **8000** journals / **44+** Million Records

Pre-prints are available now!

- 
 Content coverage from 1947 till now, focused on **devices, disease and drugs**; >2x as many index terms as MEDLINE
- 
 Up-to-date information for drug safety, device safety and evidence-based medicinal practices. Stay current with **updates 3 times a year**. Plus increasing non-English content
- 
 Unique, **over 5.0M** conference abstracts from >11,500 conferences (added since 2009)
- 
 Dedicated search forms and filters such as PICO, Medical Device Form, and the **triple-linked analysis** help to find and narrow results faster
- 
 Ability to save, share and edit complex search strategies with a group

3000 Journals are unique to Embase

Embase is the most comprehensive and up-to-date biomedical database

Embase®

Worldwide Recommendations on Embase







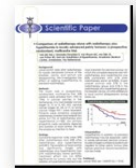




Embase Indexing: Principles



Indexing for Embase is a manual process performed by trained indexers with a biomedical background.



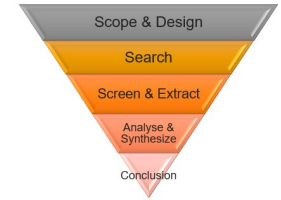
Indexers read and analyze the full text of articles in order to identify relevant concepts, and index them with the most specific **Emtree** terms.



Index terms are controlled by the Emtree thesaurus resulting in **consistent coverage of concepts that may be expressed in many different ways in the literature.**

Build your search strategy specific to medical devices
 Find best terms
 Build your search using the PICO framework
 Find articles by simple keyword search or build more complex queries

How Embase can help



Scope & Design

- Guided search forms (e.g. PICO) to formulate complex search strategy
- Auto-suggested Emtree thesaurus and synonyms

Search

- Comprehensive coverage
- Up-to-date
- Recommended by authorities

Screen &
Extract

- Filter and subheadings
- Full text indexed by Emtree
- Save search strategy, and export results

I. Scope & Design

It is important to search literature from an **objective and justified point of view**:

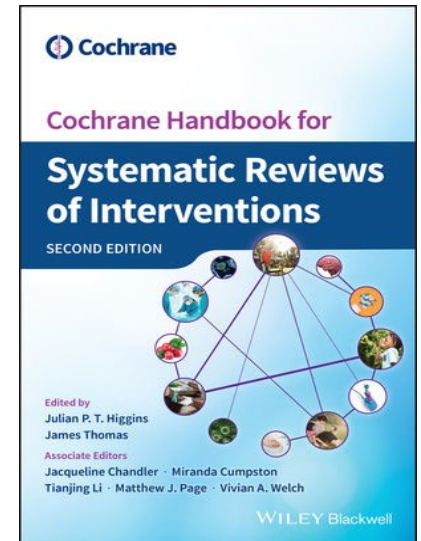
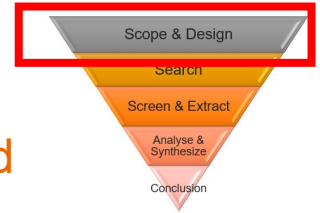
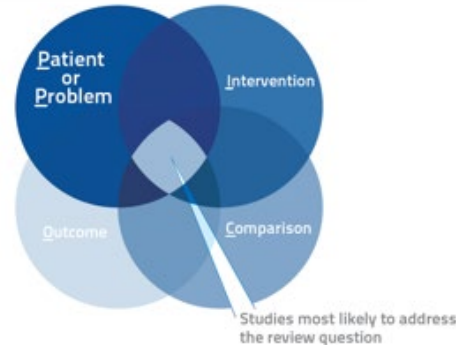
“The detailed specification of the review question(s) requires consideration of several key components (Richardson et al 1995, Counsell 1997) which can often be encapsulated by the ‘PICO’ mnemonic, an acronym for Population, Intervention, Comparison(s) and Outcome.”

Chapter 2, Cochrane Handbook for Systematic Reviews of Intervention

What is PICO?

PICO is a method used to structure the elements (concepts) of the review question into a search strategy.

- **P**atient Problem or Population,
- **I**ntervention,
- **C**omparison or Control, and
- **O**utcome



Higgins JPT, Thomas J, Chandler J, Cumpston M, Li T, Page MJ, Welch VA (editors). *Cochrane Handbook for Systematic Reviews of Interventions* version 6.0 (updated July 2019). Cochrane, 2019. Available from www.training.cochrane.org/handbook.

Using PICO in Embase to run a search

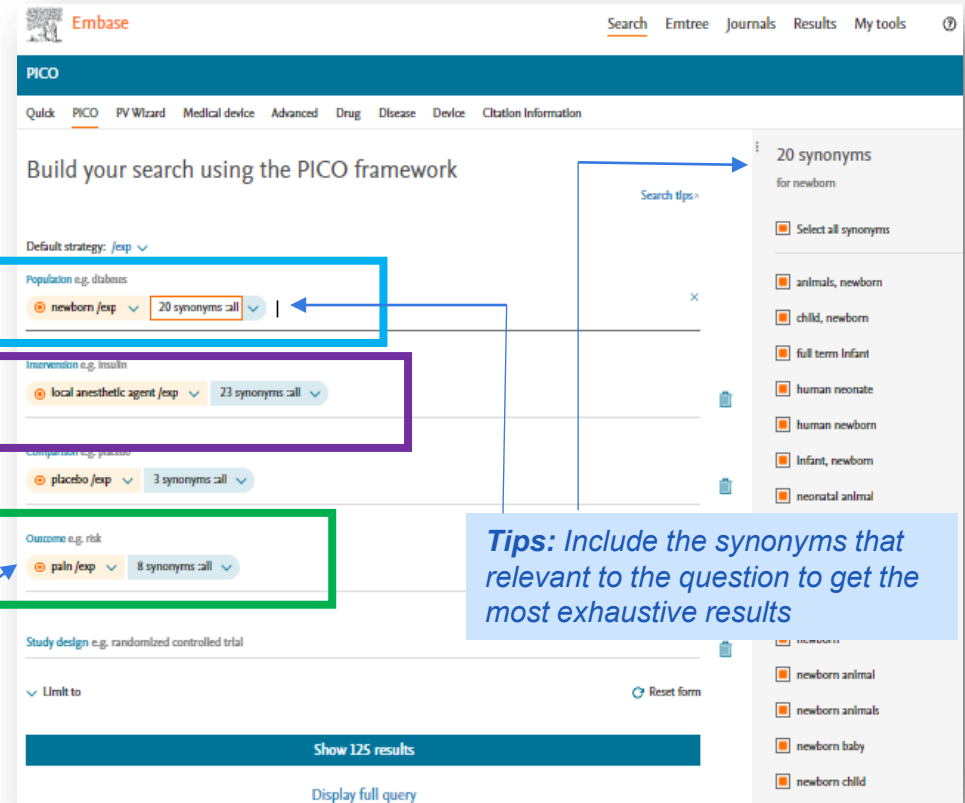
Take an example:

*Does the application of a **topical anaesthetic** applied on the skin reduce **pain** in **newborn** infants who require a procedure that punctures the skin?*

Use the **PICO** search form:

- A. **Population:** newborn infants
- B. **Intervention:** topical anaesthetics
- C. **Comparison:** placebo
- D. **Outcome:** pain

***Tips:** Recommend to use Emtree terms (with the orange dot in front) This preferred term represents all synonyms and is used to index Embase articles.*



Embase

Search Emtree Journals Results My tools

PICO

Quick PICO PV Wizard Medical device Advanced Drug Disease Device Citation Information

Build your search using the PICO framework

Default strategy: /exp

Population e.g. diabetes
 newborn /exp 20 synonyms: call

Intervention e.g. insulin
 local anaesthetic agent /exp 23 synonyms: call

Comparison e.g. placebo
 placebo /exp 3 synonyms: call

Outcome e.g. risk
 pain /exp 8 synonyms: call

Study design e.g. randomized controlled trial

Limit to

Reset form

Show 125 results

Display full query

20 synonyms for newborn

- Select all synonyms
- animals, newborn
- child, newborn
- full term Infant
- human neonate
- human newborn
- Infant, newborn
- neonatal animal

***Tips:** Include the synonyms that relevant to the question to get the most exhaustive results*

***Tips:** Recommend to use Emtree terms (with the orange dot in front) This preferred term represents all synonyms and is used to index Embase articles.*

Embase easily formulates the query via PICO

Results

Select Language ▼

```
('newborn'/exp OR 'animals, newborn' OR 'child, newborn' OR 'full term infant' OR 'human neonate' OR 'human newborn' OR 'infant, newborn' OR 'neonatal animal' OR 'neonate' OR 'neonate animal' OR 'neonatus' OR 'newborn' OR 'newborn animal' OR 'newborn animals' OR 'newborn baby' OR 'newborn child' OR 'newborn infant' OR 'newly born animal' OR 'newly born baby' OR 'newly born child' OR 'newly born infant') AND ('local anesthetic agent'/exp OR 'anaesthetic wipe' OR 'anaesthetic, local' OR 'anaesthetics, local' OR 'anaesthetics, ophthalmic' OR 'anaesthetics, otic' OR 'anaesthetics, spinal' OR 'anaesthetics, topical' OR 'anesthetic wipe' OR 'anesthetic, local' OR 'anesthetics, local' OR 'anesthetics, ophthalmic' OR 'anesthetics, otic' OR 'anesthetics, spinal' OR 'anesthetics, topical' OR 'local anaesthetic' OR 'local anaesthetic agent' OR 'local anaesthetic drug' OR 'local anesthetic' OR 'local anesthetic agent' OR 'local anesthetic drug' OR 'spinal anesthetic' OR 'topical anaesthetic' OR 'topical anesthetic') AND ('placebo'/exp OR 'placebo' OR 'placebo gel' OR 'placebos') AND ('pain'/exp OR 'acute pain' OR 'deep pain' OR 'lightning pain' OR 'nocturnal pain' OR 'pain' OR 'pain response' OR 'pain syndrome' OR 'treatment related pain')
```

Search >

Mapping ▼

Date ▼

Sources ▼

Fields ▼

Quick limits ▼

EBM ▼

Pub. types ▼

Languages ▼

Gender ▼

Age ▼

Animal ▼

Search tips ▼

+ Expand

— Collapse all

Apply >

Combine >

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^ Collapse

Sources ▼

Drugs ▼

Diseases ▼

Devices ▼

Floating Subheadings ▼

Age ▼

#1

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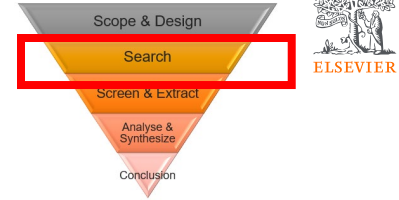
C

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```
'newborn'/exp OR 'animals, newborn' OR 'child, newborn' OR 'full term infant' OR 'human neonate' OR 'human newborn' OR 'infant, newborn' OR 'neonatal animal' OR 'neonate' OR 'neonate animal' OR 'neonatus' OR 'newborn' OR 'newborn animal' OR 'newborn animals' OR 'newborn baby' OR 'newborn child' OR 'newborn infant' OR 'newly born animal' OR 'newly born baby' OR 'newly born child' OR 'newly born infant') AND ('local anesthetic agent'/exp OR 'anaesthetic wipe' OR 'anaesthetic, local' OR 'anaesthetics, local' OR 'anaesthetics, ophthalmic' OR 'anaesthetics, otic' OR 'anaesthetics, spinal' OR 'anaesthetics, topical' OR 'anesthetic wipe' OR 'anesthetic, local' OR 'anesthetics, local' OR 'anesthetics, ophthalmic' OR 'anesthetics, otic' OR 'anesthetics, spinal' OR 'anesthetics, topical' OR 'local anaesthetic' OR 'local anaesthetic agent' OR 'local anaesthetic drug' OR 'local anesthetic' OR 'local anesthetic agent' OR 'local anesthetic drug' OR 'spinal anesthetic' OR 'topical anaesthetic' OR 'topical anesthetic') AND ('placebo'/exp OR 'placebo' OR 'placebo gel' OR 'placebos') AND ('pain'/exp OR 'acute pain' OR 'deep pain' OR 'lightning pain' OR 'nocturnal pain' OR 'pain' OR 'pain response' OR 'pain syndrome' OR 'treatment related pain')
```

125

II. Search: where to search literature?



Search should be **as exhaustive as possible**, and **includes published or non-published** articles for a comprehensive and objective view.

From appendix A4 of MEDDEV 2.7/1 rev 4, it highlights the important literature databases to be used as sources, specifically stating:



*“MEDLINE® or PubMed® can provide a good starting point for a search. however, with potentially **incomplete coverage of European journals and reduced search features**, **comprehensiveness is not necessarily guaranteed.**”*

The database should be

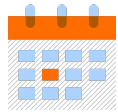
- ✓ Comprehensive
- ✓ Up-to-date
- ✓ Recommended by authorities

Embase is the most comprehensive biomedical literature database



Comprehensive

- ✓ **44M+** records, including **3.6M** conference abstracts
- ✓ Over 8000 journals from worldwide
- ✓ Content coverage from 1947 till now, focused on drugs, disease, and medical devices
- ✓ Including article preprints from MedRXiv and BioRXi



Up-to-date

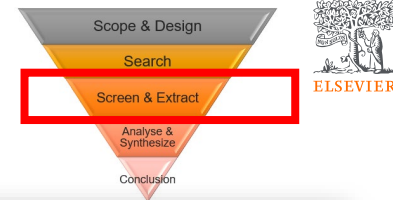
- ✓ Records added **daily**
- ✓ Embase thesaurus (Emtree) are updated **3 times per year** to capture all new concepts
- ✓ Embase AiP/In-Process indexing makes content searchable within 2-3 weeks after publication



Recommended by authorities

- ✓ European Commission
- ✓ Cochrane Handbook
- ✓ WHO
- ✓ NICE and more..

III. Screen & Extract: how to filter results?



Filters and subheadings

Quick filters on the top ribbon such as **'EBM'** that can be used to filter for any existing reviews from Cochrane or other important study types

The screenshot shows a search results interface with several orange boxes highlighting key features:

- Top Ribbon:** A box highlights the search filters including 'Mapping', 'Date', 'Sources', 'Fields', 'Quick limits', 'EBM', 'Pub. types', 'Languages', 'Gender', 'Age', and 'Animal'.
- EBM Filter:** A box highlights the 'EBM' filter in the top ribbon, which is expanded to show 'Evidence Based Medicine' options: 'Cochrane Review', 'Systematic Review', 'Meta Analysis', 'Controlled Clinical Trial', and 'Randomized Controlled Trial'.
- Results Filters:** A box highlights the 'Results Filters' sidebar on the left, listing categories like Sources, Drugs, Diseases, Devices, Floating Subheadings, Age, Gender, Study types, Publication types, Journal titles, Publication years, Authors, and Conference Abstracts.
- Subheadings:** A box highlights the 'Drugs' subheading menu, which lists various medical conditions like pain, postoperative pain, hypotension, prematurity, side effect, respiration depression, bradycardia, pruritus, and nausea, each with a 'Details' link.

A blue callout box on the right side of the screenshot contains the text: "Different types of subheadings like Sources of literatures, Drugs, Disease, Devices, Study Type and etc to narrow down as much relevant as wish".

III. Screen & Extract: how to filter results?

Full text indexed with Emtree



The screenshot shows the Embase search results interface. On the left, there are 'Results Filters' for Sources, Drugs, Diseases, Devices, Floating Subheadings, Age, Gender, and Study types. The main search results area shows 125 results for search #1. The first result is 'Evaluation of the Efficacy of Dexmedetomidine as a Local Anesthetic Agent' by Sun Y., Wu Z., Sun S., Chen R., Dai M., Dou X., Lin Y. (2022). The abstract text is displayed with several terms highlighted: 'Local Anesthetic Agent' in yellow, and 'clonidine', 'dexmedetomidine', 'lidocaine', 'placebo', and 'ropivacaine' in bold. A blue callout box points to the 'View abstract or full text articles to screen the results' link. A red box highlights the 'Index Terms' section, which lists various medical terms in bold, including 'brachial plexus', 'caudal anesthesia', 'child', 'drug efficacy', 'local anesthesia', 'male', 'Mantel Haenszel test', 'meta-analysis', 'newborn', 'outcome assessment', 'pediatric surgery', 'publication bias', 'randomized controlled trial', 'sedation', 'statistical analysis', and 'systematic review'. A second blue callout box explains that bold index terms are the major focus, yellow highlights are search terms, and green highlights are explosion terms.

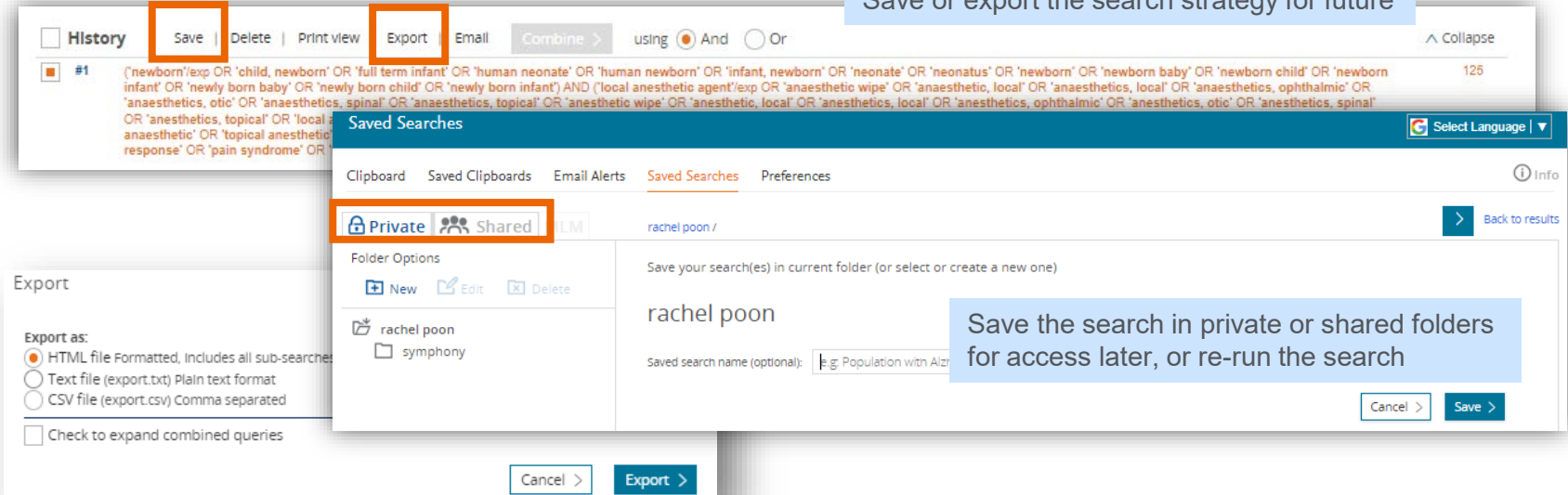
the Index Terms in bold mean they are the major focus of this record. Terms highlighted in yellow represent search terms, while terms highlighted in green are the result of explosion terms

III. Screen & Extract: how to filter results?

Save strategy and export results

One major criteria of systematic reviews is that searches should be **reproducible**, to provide transparency for others to verify and understand how it was constructed to increase the creditability of the review.

Save or export the search strategy for future



The screenshot displays a search interface with several key elements:

- Search Strategy:** A complex query is shown, including terms like 'newborn', 'child', 'infant', 'neonate', 'anaesthetic', and 'pain syndrome'.
- Actions:** Buttons for 'Save', 'Delete', 'Print view', 'Export', and 'Email' are visible. The 'Save' and 'Export' buttons are highlighted with orange boxes.
- Folder Selection:** A 'Saved Searches' dialog is open, showing a folder named 'rachel poon'. The 'Private' and 'Shared' options are highlighted with orange boxes.
- Export Options:** An 'Export' dialog is open, showing options for 'HTML file Formatted', 'Text file (export.txt)', and 'CSV file (export.csv)'. The 'HTML file Formatted' option is selected.
- Callouts:** Two blue callout boxes provide instructions: 'Save or export the search strategy for future' and 'Save the search in private or shared folders for access later, or re-run the search'.

Summary

Embase helps researches stay on top of their research needs:



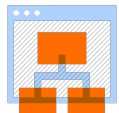
Comprehensive and Up-to-date

- A single database provides all types of articles needed
- Continued developing Emtree terms to capture new concepts, diseases and etc



Dedicated search forms and filter features

- Guided search forms (e.g. PICO) to help construct complex queries
- Filters and subheadings to screen and extract to the most relevant results



Emtree and full-text indexing

- 81K+ Emtree terms and 355K+ synonyms for all concepts with precision
- Full text articles indexed manually to capture all major and minor ideas



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Thank you

Piotr Golkiewicz
Customer Consultant
Central Eastern Europe
Elsevier Life Sciences
p.golkiewicz@elsevier.com

