

Search and Screening

2025 Johns Hopkins Evidence-Based Practice

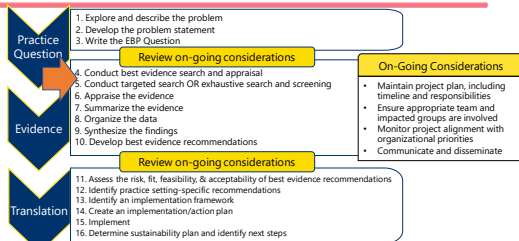
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Objectives

- Define types of literature searches and their context in an EBP project
- Describe action items in a best evidence literature search
- Describe action items in an exhaustive literature search, including building basic key concepts
- Define literature screening
- Explore types of bias that can influence a literature search/screening

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The Johns Hopkins EBP Model



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Appendix C: Searching and Screening Tool



Johns Hopkins Evidence-Based Practice Model and Guidelines

Appendix C
Searching and Screening Tool

Purpose: This tool guides the team through the steps of searching for evidence that answers their EBP question and finding the process. The team will first look for pre-appraised evidence in their evidence search. The results of that investigation will guide the next steps (a targeted or exhaustive search). Recording the evidence identification process creates confidence in the eventual project recommendations by demonstrating a thorough and unbiased approach.

Section I: Key Elements of the EBP Question
Identify the key elements of the EBP question (from the Question Development Tool)

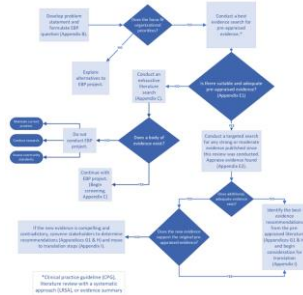
Population	
Setting	
Topic or intervention(s)	
Outcomes (as needed)	

Section II: Best Evidence Search
Does pre-appraised evidence exist in the form of clinical practice guidelines (CPGs), literature reviews with a systematic approach (SRs), or evidence summaries?

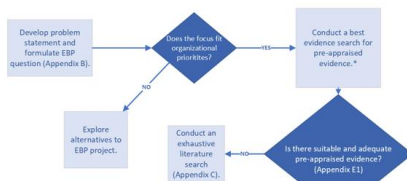
☐ Yes → Appraise using the Pre-Appraised Evidence Appraisal Tool (Appendix E1)
or
☐ No → Is the evidence suitable and adequate quality?

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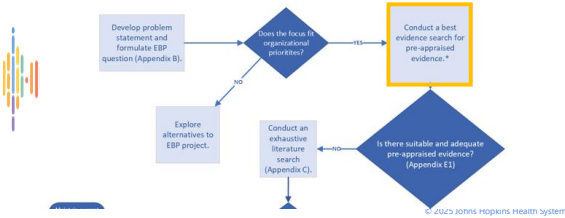
Overview of the Evidence Phase Decision Tree



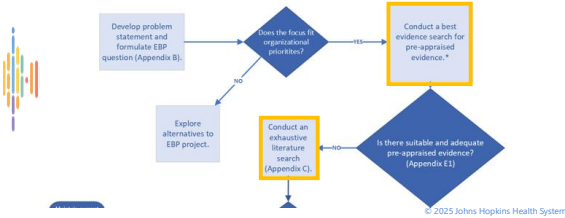
Overview of the Evidence Phase



Overview of the Evidence Phase



Overview of the Evidence Phase



Types of Evidence Searches

Best-Evidence	Exhaustive
Focused process to identify key foundational articles and existing syntheses (pre-appraised evidence), but not all articles on a topic	Gold standard, systematically identifies all relevant literature with structured, comprehensive, and reproducible methods

Types of Evidence Searches



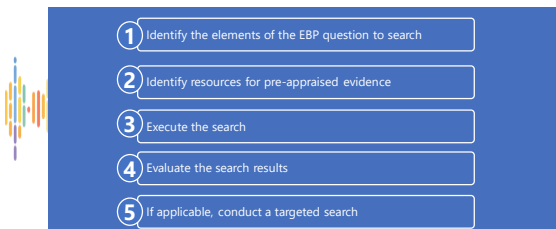
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Best Evidence Search

- Leverage the work of other experts
- Saves time and does not repeat work unnecessarily
- Are good for time-sensitive decision making

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Best Evidence Search: Action Items



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1 Identify the elements of the EBP question to search

Johns Hopkins Evidence-Based Practice Model and Guidelines

Appendix C
Searching and Screening Tool

Purpose: This tool guides the team through the steps of searching for evidence that answers their EBP question and finding the process. The team will first look for pre-appraised evidence in their evidence search. The results of that investigation will guide the next steps (a targeted or exhaustive search). Researching the evidence identification process within evidence in the current project team members by demonstrating a thorough and unbiased approach.

Section 1: Key Elements of the EBP Question
Identify the key elements of the EBP question (from the Question Development Tool)

Population	
Setting	
Topic or Intervention(s)	
Outcomes (as needed)	

Section 2: About Evidence Sources
Search pre-appraised evidence only in the form of clinical practice guidelines (CPGs), literature reviews with a systematic approach (SRs), or evidence summaries?

☐ Yes → Appraise using the Pre-Appraised Evidence Appraisal Tool (Appendix E2)

☐ No → Complete targeted search for additional evidence based on search date in pre-appraised evidence to determine if relevant evidence has been published in the literature

☐ No → Skip to Section 3 (exhaustive search)

Best Evidence Search

2 Identify resources for pre-appraised evidence

Best Evidence Search

Trip Medical Database

- Repository of clinical guidance using high quality research evidence with leveling and bias indicators.
- Includes clinical practice guidelines, systematic reviews, regulatory guidance, primary research and textbooks
- Indexes Cochrane Library

JBPI (Joanna Briggs Institute)

- Research and development center with a nursing focus whose goal is to "support the synthesis, transfer, and utilization of evidence through identifying feasible, appropriate, meaningful, and effective healthcare practices."
- Includes evidence summaries, guidelines, best practices, systematic reviews, patient education and reports.

3 Execute the search

Best Evidence Search

Trip

About Trip Evidence Blog

Search PICO Advanced

vascular access pain

Search

Search JBPI EBP Database:

vascular access pain

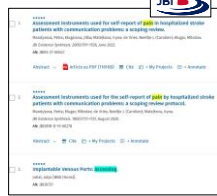
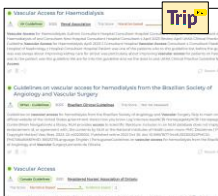
Search

Publication Types:

4 Evaluate the search results

Best Evidence Search

Quantity, quality, and applicability



5 Conduct a targeted search (if applicable)

Best Evidence Search

If evidence is **SUITABLE**:

- Recent enough
- Answers all aspects of the EBP question
- Sufficient quality

Conduct a **targeted search** based on search date in the **pre-appraised evidence**.

Look for:

1. Moderate to strong support for decision-making.
2. Information that would change the recommendations in the pre-appraised evidence

Types of Evidence Searches

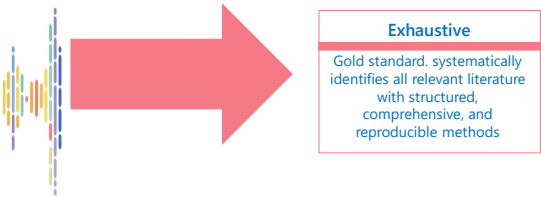
Best-Evidence

Focused process to identify key foundational articles and existing syntheses (pre-appraised evidence), but not all articles on a topic

Exhaustive

Gold standard, systematically identifies all relevant literature with structured, comprehensive, and reproducible methods

Types of Evidence Searches



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Exhaustive Evidence Search: Action Items

A blue rectangular box with a white border. Inside the box is a numbered list of 7 action items. Each item is in a white box with a blue border. The items are: 1 Determine which databases to search, 2 Build the search- Identify key concepts, 3 Build the search- Create search strings, 4 Execute the search, 5 Apply initial limits or filters, when appropriate, 6 Evaluate, revise, and refine the search, 7 Document the search.

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1 Determine which databases to search

Name	Use When	Types of Indexed Resources
CINAHL	Seeking literature focused on nursing and allied health. It also contains information on biomedicine, alternative or complimentary medicine	Textbooks, nursing dissertations, conference abstracts, peer-reviewed journals, legal cases, clinical trials
MEDLINE (PubMed)	Looking to answer EBP questions focused on healthcare science, with a focus on biomedical research	Peer-reviewed journals, ahead of print citations, conference abstracts, online books, and clinical trials
Embase	Looking to answer EBP questions focused on biomedical research; Provides citations beyond what is covered in PubMed, including a focus on medical devices, drugs, diseases, and chemicals	Peer-reviewed journals, conference abstracts, online books
Epistemonikos	Looking for scientific evidence with an international lens, including publications in multiple languages and systematic reviews	Peer-reviewed journals, evidence-based policy briefs, guidelines, and structured summaries of evidence

Exhaustive Search

Google Scholar

Exhaustive Search

[illegible][illegible]

Exhaustive Search

[illegible]

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

PubMed: MeSH=Medical Subject Heading

CINAHL: CINAHL Subject Headings

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

Article

Article

Article

Article

Article

Article

Article

Article

Article

Article

Article

Article

Article

Article

Article

Each circle represents an article in a database

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

Sleep

Slumber

Sleep

Rest

Sleep

Insomnia

Sleep

Insomnia

Sleeping

Sleep

Rest

Sleeping

Shooze

Slumber

Rest

Problem: articles may use different terms for the same thing

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

The words or phrases used in performing a search affect the success of the search.



An effective and comprehensive search uses a mix of **Controlled Vocabulary** and **Key Words**

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

Older Adult

=

Elderly

Senior

Geriatric

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

P- Patient in ICU

I- Best practices to prevent pressure ulcers

C- Current practice

O- Less pressure ulcers

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

P- Patient in ICU

I- Best practices to prevent pressure ulcers

C- Current practice

O- Less pressure ulcers

Pressure Ulcers

ICU

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

P- Patient in ICU

I- Best practices to prevent pressure ulcers

C- Current practice

O- Less pressure ulcers

Pressure Ulcers

ICU

Pressure ulcer

Pressure ulcers

Pressure injury

Pressure injuries

Bed sore

Bedsore

Intensive care unit

Intensive care

MICU

Medical intensive care unit

Critical care

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

P- Patient in ICU

I- Best practices to prevent pressure ulcers

C- Current practice

O- Less pressure ulcers

Pressure Ulcers

ICU

Pressure ulcer

Pressure ulcers

Pressure injury

Pressure injuries

Bed sore

Bedsore

Intensive care unit

Intensive care

MICU

Medical intensive care unit

Critical care

11

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

"Critical Care"

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

Critical Care

Faculty **care** about **critical** thinking

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

 "colour blindness"

"color blindness"



3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

Pressure Ulcers

Pressure ulcer
Pressure ulcers
Pressure injury
Pressure injuries
Bed sore
Bedsores

ICU

Intensive care unit
Intensive care
MICU
Medical intensive care unit
Critical care

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

Pressure Ulcers

Pressure ulcer
Pressure ulcer
Pressure injury
Pressure injuries
Bed sore
Bedsores

ICU

Intensive care unit
Intensive care
MICU
Medical intensive care unit
Critical care

Replace word ending with symbol (*)

Mobil* = mobility, mobilation, mobilize, etc.

Injur* = injury and injuries

3 Build the Search- Searching Strategies

Controlled Vocabulary

Key Words

Phrase Searching

Truncation

Boolean Operators

All Fields

AND

AND

OR

NOT

3 Build the search- create search strings

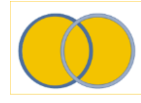
Exhaustive Search

Use **Boolean operators** to create search strings

Boolean operators indicate relationships between terms.



AND



OR



NOT

3 Build the search- create search strings

Exhaustive Search

EXAMPLE:
Among hospitalized pediatric patients on invasive mechanical ventilation, what are best practices regarding the administration of nebulized medications?

PubMed
CINAHL
Embase

(Hospital* OR ward OR "acute care" OR "critical care" OR in-patient OR inpatient OR ICU) OR "hospital*" [MeSH] OR "hospital unit*" [MeSH] OR "inpatients" [MeSH] OR "Pediatric*" OR adolescent* OR child* OR infant OR kid OR paediatric* OR juvenile* OR baby OR teen* OR "Adolescent" [MeSH] OR "Child" [MeSH] OR "Infant" [MeSH] OR "Puberty" [MeSH]

AND

("invasive mechanical ventilation" OR IMV OR ventilator* OR intubate* OR "artificial ventilation" OR "respiration, artificial" [MeSH] OR "intubation" [MeSH] OR "ventilation, mechanical" [MeSH])

AND

(Nebulizer* OR nebuliz* OR aerosol* OR vaporiz* OR "nebulizers and vaporizers" [MeSH] OR "aerosols" [MeSH] OR "Administration, Inhalation" [MeSH])

Hospital* OR ward OR "acute care" OR "critical care" OR in-patient OR inpatient OR ICU OR MH "Inpatients" OR MH "hospital units" OR MH "hospitals"

AND

(Pediatric* OR adolescent* OR child* OR infant OR kid OR paediatric* OR juvenile* OR baby OR teen* OR MH "Adolescence" OR MH "Child" OR MH "Infant" OR MH "Puberty")

AND

("invasive mechanical ventilation" OR IMV OR ventilator* OR intubate* OR "artificial ventilation" OR MH "respiration, artificial" OR MH "intubation" OR MH "ventilation, mechanical")

AND

(Nebulizer* OR nebuliz* OR aerosol* OR vaporiz* OR MH "nebulizers and vaporizers" OR MH "aerosols" OR MH "Administration, Inhalation")

Hospital* OR ward OR "acute care" OR "critical care" OR in-patient OR inpatient OR ICU OR "hospital patient" OR "hospital wing"

AND

(Pediatric* OR adolescent* OR child* OR infant OR kid OR paediatric* OR juvenile* OR baby OR teen* OR "adolescent" OR "child" OR "infant" OR "puberty" OR "pubert")

AND

("invasive mechanical ventilation" OR IMV OR ventilator* OR intubate* OR "artificial ventilation" OR "artificial ventilation" OR "mechanical ventilator" OR "intubation" OR "respiration")

AND

(Nebulizer* OR nebuliz* OR aerosol* OR vaporiz* OR "nebulizer" OR "inhalational drug administration" OR "aerosol" OR "bronchodilating agent")

4 Execute the search

Exhaustive Search

PubMed®

["vascular access" OR "intravenous placement" OR "intravenous access" OR "IV placement" OR "IV access" AND] X Search

Searching: CINAHL Plus with Full Text Choose Databases
☐ Suggest Subject Terms

vascular access device* OR peripheral venous cath* Select a Field (optional) Search

AND - pain OR relief OR stress OR discomfort OR ja Select a Field (optional) Clear

AND - Select a Field (optional) +

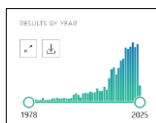
Basic Search Advanced Search Search History

5 Apply initial limits or filters, when appropriate

Exhaustive Search

Appendix C Searching and Screening Tool

What date limit will you use and why?	
Inclusions:	Exclusions:



Common filters include language or year

6 Evaluate, revise, and refine the search

Exhaustive Search

Iterative, will need adjustments
May notice gaps or a need to update terms or the question.

EXAMPLE:

Among hospitalized pediatric patients on invasive mechanical ventilation, what are best practices regarding the administration of nebulized medications?

"Bronchodilator Agents"

7 Document the search

Exhaustive Search

Appendix C Searching and Screening Tool

What is the date the team conducted the search?

June 27, 2024

What are the search strings and number of results from each database?

Database	Search String	Number of Results
CINAHL	(hospital OR ward OR "acute care" OR "critical care" OR inpatient OR intensive OR ICU OR MH "respiratory" OR MH "hospital unit" OR MH "respiratory") AND (Pharmac OR antibiotic OR child OR infant OR kid OR paediatric OR juvenile OR baby OR neon OR MH "adolescent" OR MH "child" OR MH "infant" OR MH "pediatric") AND ("invasive mechanical ventilation" OR MV OR ventilator OR intubate OR "artificial ventilation" OR MH "respiration artificial" OR MH "intubation" OR MH "ventilation, mechanical" AND (nebulizer OR nebulizer OR aerosol OR vaporizer OR MH "nebulizers and vaporizers" OR MH "aerosols" OR MH "Administration, Inhalation" OR MH "Bronchodilator Agents/CT")	61

How will the team systematically screen the results to identify evidence that answers the EBP question and meets the inclusion/exclusion criteria (select all that apply)?

Important for rigor and reproducibility



Literature Screening



You have your systematic search results...

Now what?



Literature Screening

SCREENING

The process to systematically narrow down the results of a comprehensive literature search.



Literature Screening

PURPOSE

- Helps create an unbiased list of results that strengthens the project and recommendations
- Keeps the team on the same page
- Saves time
- Allows the review to be replicated, increasing rigor



Literature Screening

PROCESS



- Ideally involves two people independently screening
- Is well documented and tracked

Guidance available through **Cochrane Library** & **PRISMA** (Preferred Reporting Items for Systematic Reviews and Meta-Analysis).

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Literature Screening: Action Items

- 1 Finalize inclusion and exclusion criteria
- 2 Determine a plan
- 3 Screen title and abstracts
- 4 Screen full text
- 5 Document the process

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Literature Screening: Action Items

1

Finalize inclusion and exclusion criteria

2

3

4

5

Determine a plan

Screen title and abstracts

Screen full text

Document the process

Consider:

• Population

• Setting

• Language

• Year

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Literature Screening: Action Items

1

Finalize inclusion and exclusion criteria

2

3

4

5

Determine a plan

Screen title and abstracts

Screen full text

Document the process

Databases:

Covidence (subscription)

Abstrackr (free)

Excel

Approaches:

Number of reviewers

(independent or teams)

Title and abstract vs title then

abstract

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Literature Screening: Action Items

1

Finalize inclusion and exclusion criteria

2

3

4

5

Determine a plan

Screen title and abstracts

Screen full text

Document the process

Look at **ONLY** title and abstract:

• Does this answer the EBP question?

• Does this meet the

inclusion/exclusion criteria?

Only 1 "no" is needed

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Literature Screening: Action Items

1

Finalize inclusion and exclusion criteria

2

Determine a plan

3

Screen title and abstracts

4

Screen full text

5

Document the process

Evaluate the **remaining literature**:

- Does this answer the EBP question?
- Does this meet the inclusion/exclusion criteria?

Only 1 "no" is needed

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Literature Screening: Action Items

1

Finalize inclusion and exclusion criteria

2

Determine a plan

3

Screen title and abstracts

4

Screen full text

5

Document the process

Total Number of Results (from systematic and hand searching)

Number of Duplicates

Records Excluded in Title and Abstract Screening

Records excluded

Records Reviewed in Full Text Screening

Records excluded

Records Included for Secondary and Synthesis

Appendix C
Searching and Screening Tool

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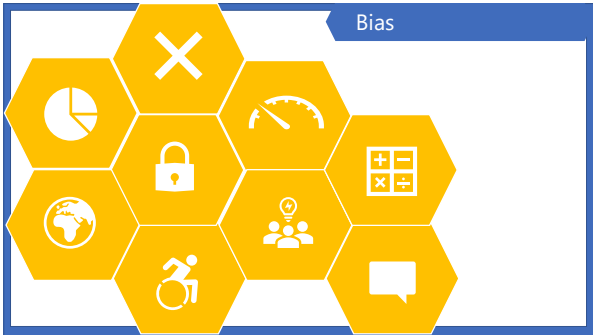
Minimizing Bias

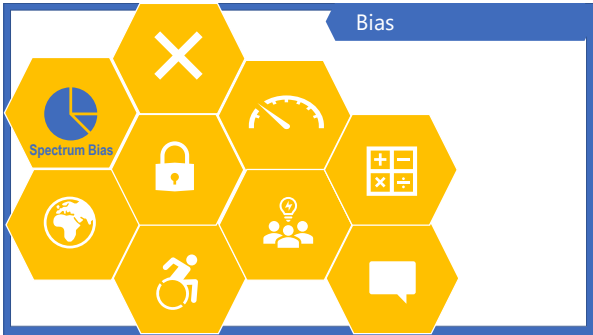
Definition

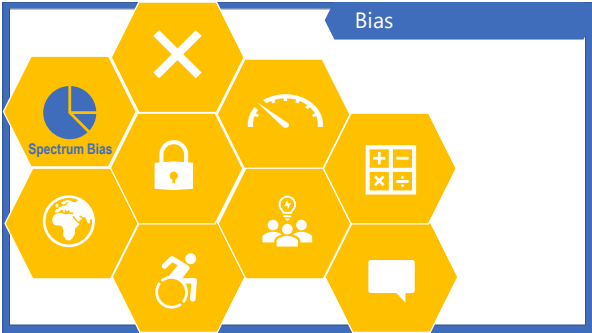
BIAS

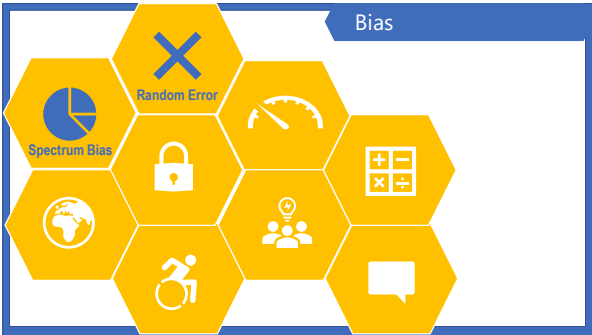
bi·as
/ˈbiːəs/
1. An influence that produces a distortion or error and results in a systematic alteration from the truth (Polit & Beck, 2017; McDonagh et al., 2013).

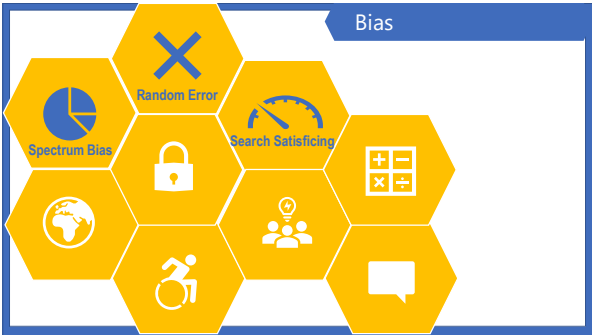
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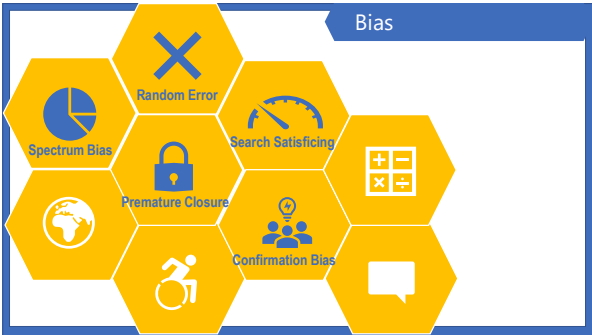


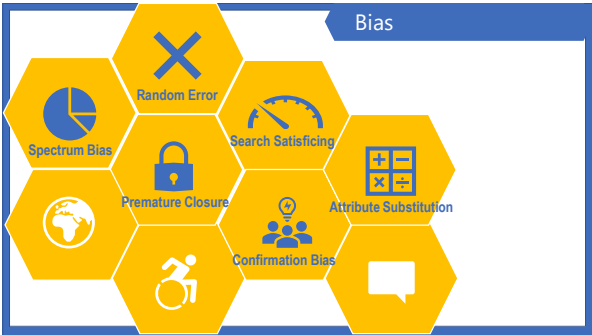


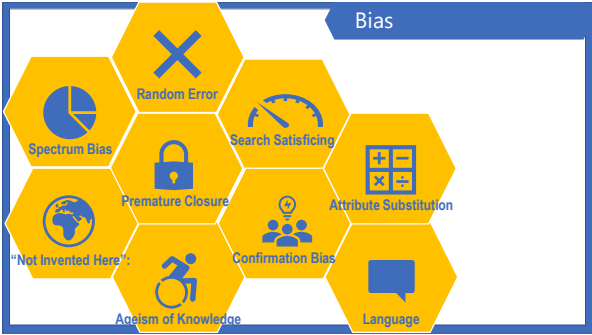












Summary

Best evidence searches look for pre-appraised evidence that may answer the EBP question.

When best evidence does not exist, an exhaustive search is done. Use the **Search and Screening Tool** (Appendix C) to guide the process.

An effective **search strategy** identifies relevant databases and builds search strings that reflect the EBP question.

Systematic screening of search results is needed to ensure recommendations reflect the true state of the literature.

Minimizing bias during the search and screening steps is critical.

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