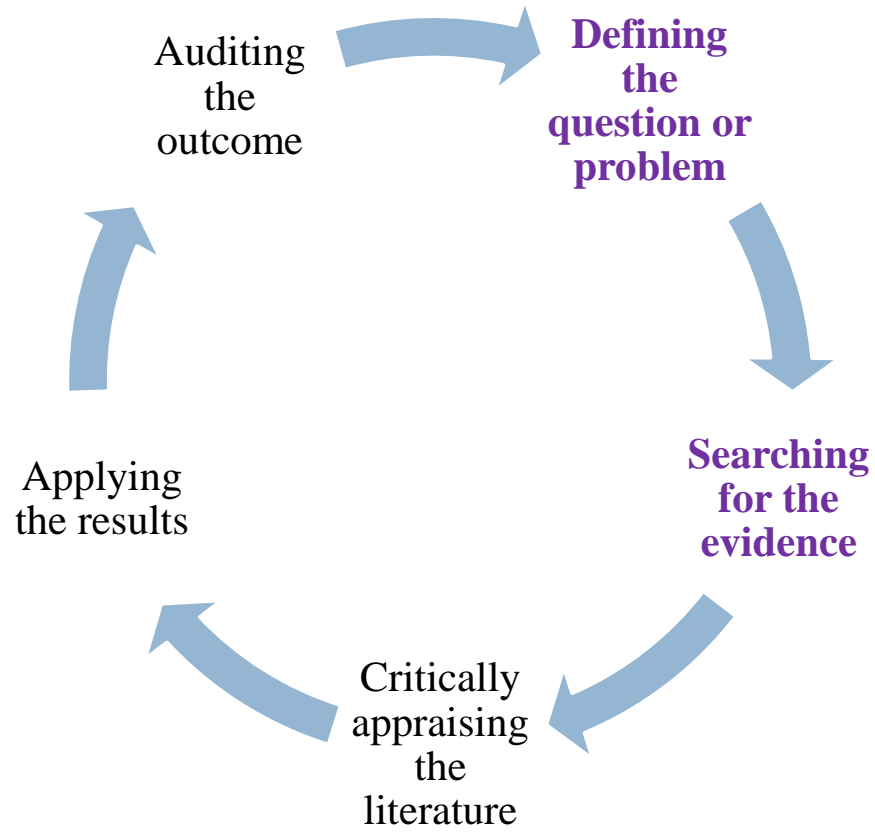
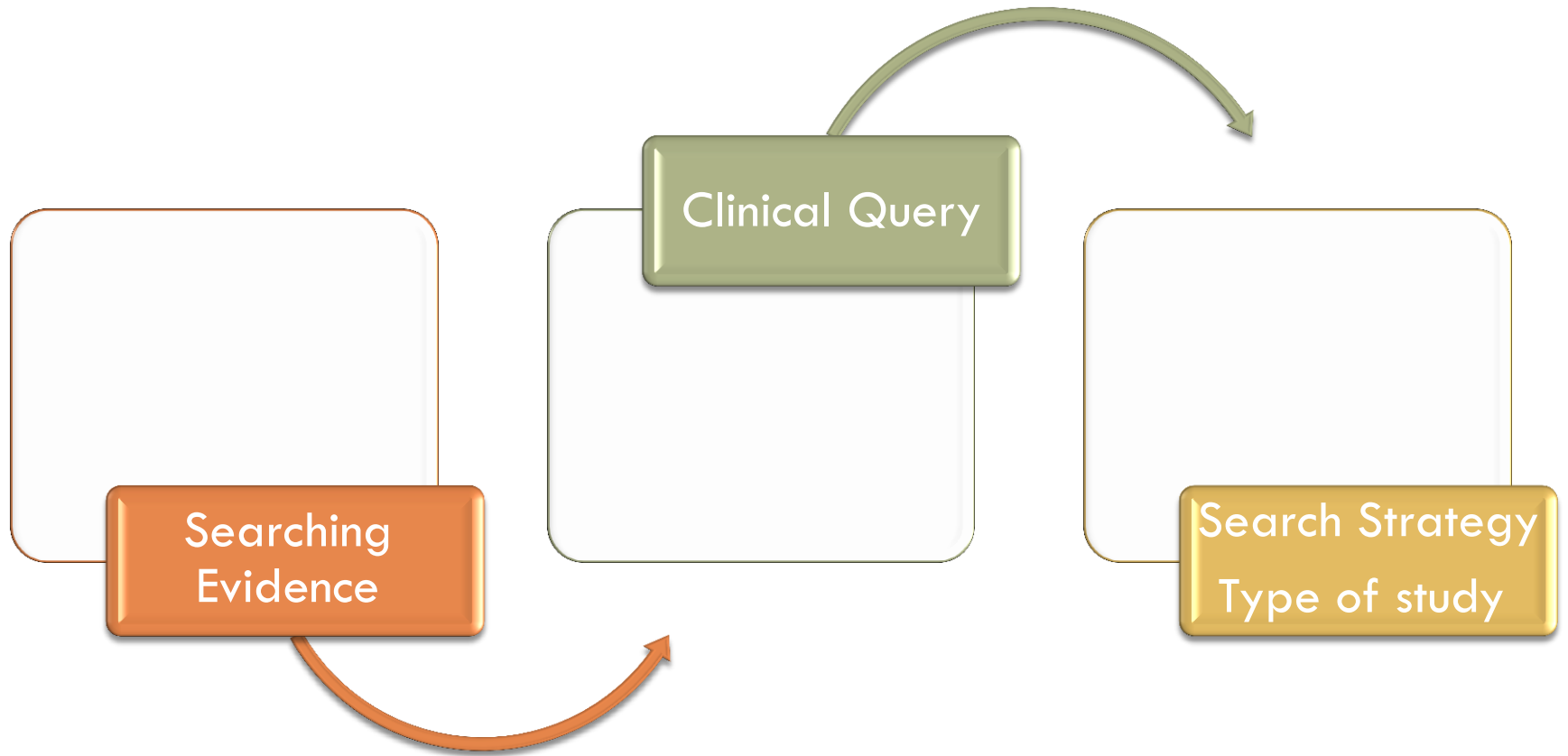


EVIDENCE SEARCHING IN EBM

By: Masoud Mohammadi

Steps in EBM





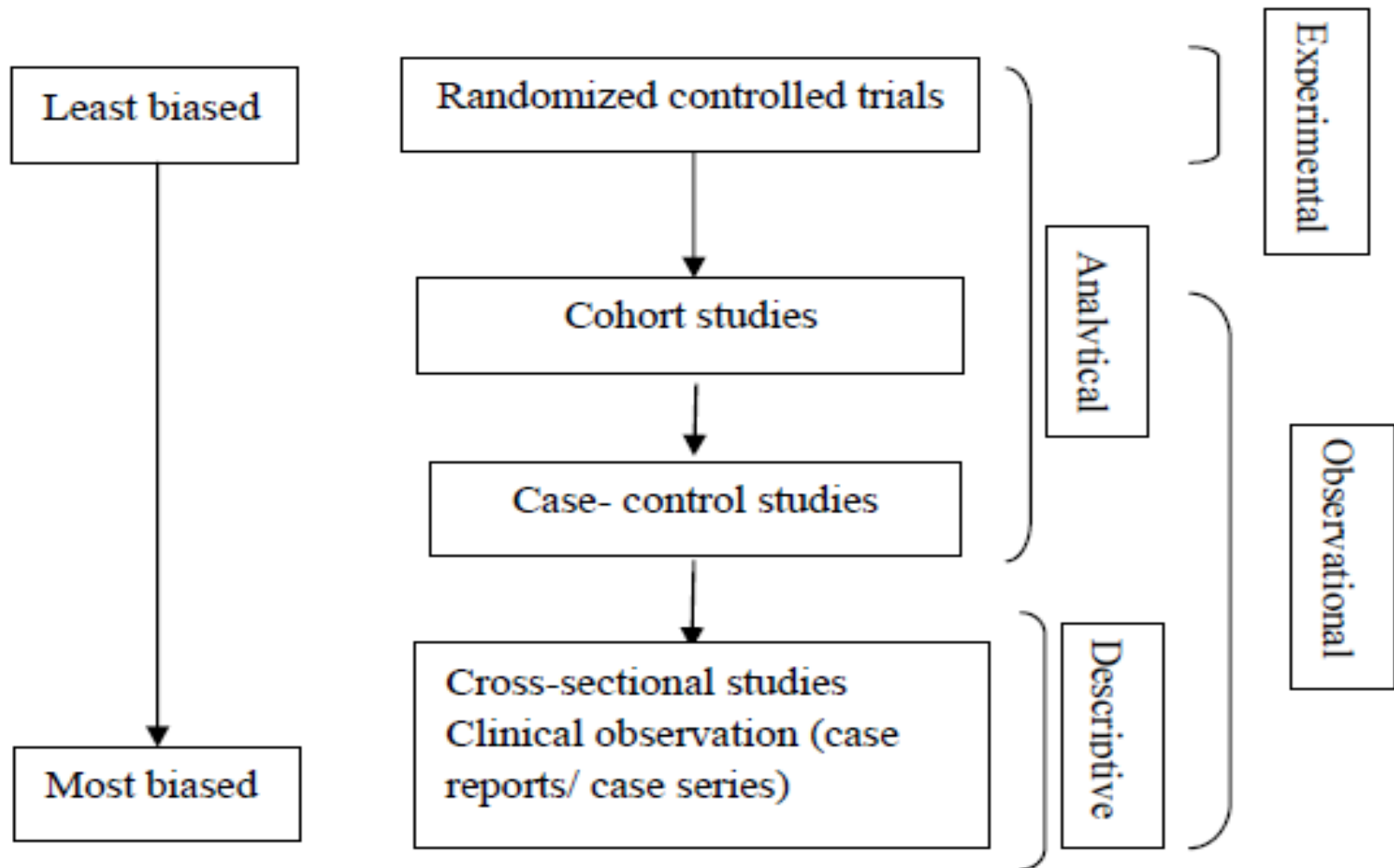
Type of question = type of study design

Type of question	Suggested study
Therapy	RCT > prospective cohort
Diagnosis	Cross-sectional study with random or consecutive sample
Etiology/Harm	RCT > cohort > case control > case series
Prognosis	Cohort study > case control > Case series
Prevention	RCT > cohort study > case control > case series
Cost	Economic analysis


Question	Best study designs*	Description
INTERVENTION	Randomized controlled trial (RCT)	Subjects are randomly allocated to treatment or control groups and outcomes assessed.
AETIOLOGY AND RISK FACTORS	Randomized controlled trial	As aetiology questions are similar to intervention questions, the ideal study type is an RCT. However, it is usually not ethical or practical to conduct such a trial to assess harmful outcomes.
	Cohort study	Outcomes are compared for matched groups with and without exposure or risk factor (prospective study).
	Case-control study	Subjects with and without outcome of interest are compared for previous exposure or risk factor (retrospective study).
FREQUENCY AND RATE	Cohort study	As above.
	Cross-sectional study	Measurement of condition in a representative (preferably random) sample of people.
DIAGNOSIS	Cross-sectional study with random or consecutive sample	Preferably an independent, blind, comparison with 'gold standard' test.
PROGNOSIS AND PREDICTION	Cohort /survival study	Long-term follow-up of a representative cohort.

* A systematic review of all the available studies is better than an individual study.

Dividing study types based of study bias



Clinical Query and Study Type

Level		Intervention ¹	Diagnosis ²	Prognosis ¹	Aetiology ^{1,3}
Least Biased  Most biased	I	Systematic review of level II studies	Systematic review of level II studies	Systematic review of level II studies	Systematic review of level II studies
	II	Randomized controlled trial	Cross-sectional study among consecutive presenting patients	Inception cohort study	Prospective cohort study
	III	One of the following: <ul style="list-style-type: none"> ■ non-randomized experimental study (e.g. controlled pre- and post-test intervention study) ■ comparative (observational) study with a concurrent control group (e.g. cohort study, case-control study) 	One of the following: <ul style="list-style-type: none"> ◆ cross-sectional study among non-consecutive patients ◆ diagnostic case-control study 	One of the following: <ul style="list-style-type: none"> ■ untreated control patients in a randomized controlled trial ■ retrospectively assembled cohort study 	One of the following: <ul style="list-style-type: none"> ◆ retrospective cohort study ◆ case-control study (Note: these are the most common study types for aetiology, but see level III for intervention studies for other options)
	IV	Case series	Case series	Case series, or a cohort study of patients at different stages of disease	A cross-sectional study

Steps in the Review Process

- Defining and refining the research question
- Divide into concepts (PICO)
- Think about synonyms of key concepts
- Think of best combination of concepts
- Identify resources
- Test strategy
- Revise strategy
- Re-test strategy
- Adapt strategy for different databases

Search Strategy

- 1. Formulate your question
- 2. Understand basic database structure
- 3. Use of Boolean Logic
- 4. Use Field Searching
- 5. Use of Controlled Vocabulary (Like MESH, Emtree)
- 6. Specialty techniques (truncation, etc.)
- 7. Building your search strategy

Boolean Operators

- Standard Boolean Logic for database searching uses 3 relationships among search terms.

AND

OR

NOT

- It is both simple and powerful.

Boolean Logic in PICO

(Population OR synonym1 OR synonym 2...) AND
(Intervention OR synonym1 OR synonym 2...) AND
(Comparator OR synonym1 OR synonym 2...) AND
(Outcome OR synonym1 OR synonym 2...)

Example:

- **Question:** In adults screened with faecal occult blood testing, compared with no screening, is there a reduction in the mortality from colorectal cancer?

Question part	Question term	Synonyms'
Population/problem	Adult, human, Colorectal cancer	Bowel cancer, colorectal neoplasm
Intervention	Screening	Screen, early detection
Comparator	No screening	-
Outcome	Mortality	Death, survival

Strategy of Search for this example:

(Bowel cancer **OR** colorectal neoplasm) **AND**
(Screen* **OR** early detection) **AND** (Death **OR**
Mortality **OR** Survival)

Evidence Based Medicine Databases

- PubMed
- Cochrane Library
- Clinical Evidence
- Embase
- Ovid
- UpToDate

Pubmed

- PubMed is the free interface that provides access to the MEDLINE bibliographic database of the National Library of Medicine.
- PubMed comprises more than **26 million citations** for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to **full-text content from PubMed Central and publisher web sites**.

What can you do in PubMed?


- Search for articles (usually abstracts)
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 - By Journal, etc.
- • Combine searches
- • Link to related articles
- • Link to outside sources
 - To purchase the full article
 - Look t related books (including pages in the books)
- • **Clinical queries**

Clinical Queries

- From the Clinical Queries page you can search by a clinical study category, **find systematic reviews** and run medical genetics searches.

□ **The clinical study categories** use built-in search filters that will limit retrieval to citations to articles reporting research conducted with specific methodologies, including those that report applied clinical research. To find citations for a specific clinical study category:

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3. You may then change the category or scope, if desired.



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This column displays citations filtered to a specific clinical study category and scope. These search filters were developed by [Haynes RB et al.](#) See more [filter information](#).

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This column displays citations for systematic reviews, meta-analyses, reviews of clinical trials, evidence-based medicine, consensus development conferences, and guidelines. See [filter information](#) or additional [related sources](#).

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PubMed Clinical Queries

Results of searches on this page are limited to specific clinical research areas. For comprehensive searches, use [PubMed](#) directly.

(Bowel cancer OR colorectal neoplasm) AND (Screen* OR early detection) AND (Death OR Mortality OR Survival)

Search

Clinical Study Categories

Category: Therapy

Scope: Broad

Systematic Reviews

Medical Genetics

Topic: All

Results: 5 of 1733

The risk of colorectal cancer is not increased after a diagnosis of urothelial cancer: a population-based study.

Harlos CH, Singh H, Nugent Z, Demers A, Mahmud SM, Czaykowski PM. *Curr Oncol.* 2016 Dec; 23(6):391-397. Epub 2016 Dec 21.

Using Specialist Screening Practitioners (SSPs) to increase uptake of the Bowel Scope (Flexible Sigmoidoscopy) Screening Programme: a study protocol for a feasibility single-stage phase II trial.

McGregor LM, Skrobanski H, Miller H, Ritchie M, Berkman L, Morris S, Rees C, von Wagner C. *Pilot Feasibility Stud.* 2016 Sep 14; 2:54. Epub 2016 Sep 14.

Assessing Colorectal Cancer Screening Barriers by Two Methods.

Katz ML, Young GS, Zimmermann BJ, Tatum CM, Paskett ED. *J Cancer Educ.* 2016 Dec 8; . Epub 2016 Dec 8.

Screening for Colorectal Cancer and Evolving Issues for

Results: 5 of 319

Screening for Colorectal Cancer and Evolving Issues for Physicians and Patients: A Review.

Lieberman D, Ladabaum U, Cruz-Correa M, Ginsburg C, Inadomi JM, Kim LS, Giardiello FM, Wender RC. *JAMA.* 2016 Nov 22; 316(20):2135-2145.

Antecolic versus retrocolic reconstruction after partial pancreaticoduodenectomy.

Hüttner FJ, Klotz R, Ulrich A, Büchler MW, Diener MK. *Cochrane Database Syst Rev.* 2016 Sep 30; 9:CD011862. Epub 2016 Sep 30.

The effectiveness of FOBT vs. FIT: A meta-analysis on colorectal cancer screening test.

Mousavinezhad M, Majdzadeh R, Akbari Sari A, Delavari A, Mohtasham F. *Med J Islam Repub Iran.* 2016 May 9; 30:366. Epub 2016 May 9.

Screening for Colorectal Cancer: A Systematic Review for the U.S. Preventive Services Task Force

Results: 5 of 1192

Modeling the prevention of colorectal cancer from the combined impact of host and behavioral risk factors.

Frampton M, Houlston RS. *Genet Med.* 2016 Aug 4; . Epub 2016 Aug 4.

A combinatorial strategy for treating KRAS-mutant lung cancer.

Manchado E, Weissmueller S, Morris JP 4th, Chen CC, Wullenkord R, Lujambio A, de Stanchina E, Poirier JT, Gainor JF, Corcoran RB, et al. *Nature.* 2016 Jun 30; 534(7609):647-51.

Blood-Based Screening for Colon Cancer: A Disruptive Innovation or Simply a Disruption?

Parikh RB, Prasad V. *JAMA.* 2016 Jun 21; 315(23):2519-20.

Screening for Colorectal Cancer: US Preventive Services Task Force Recommendation Statement.

US Preventive Services Task Force., Bibbins-Domingo K, Grossman DC,

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Bibliography of controlled trials (some not indexed in MEDLINE).
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