Career Development Series 2021

# Evidence Synthesis Primer: A Step by Step Guide (Part 1)

Presentation will begin at 12:00 PM (PT)

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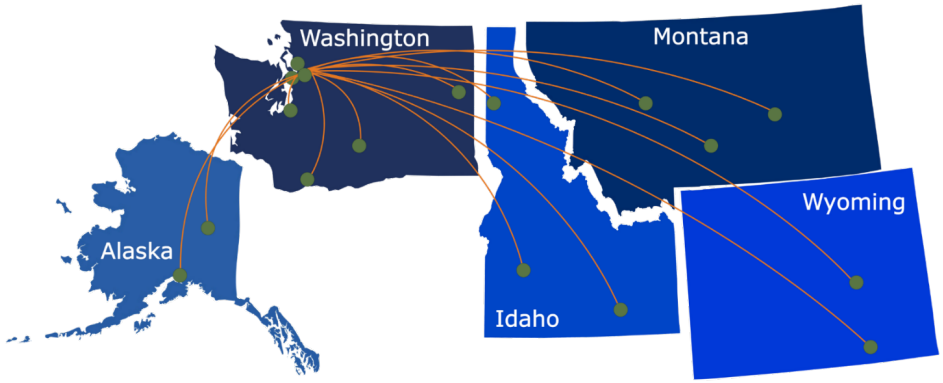

# What We Offer:

1. **Research Support Services:** Members gain access to the different research services, resources, and tools offered by ITHS, including the ITHS Research Navigator.

2. **Community Engagement:** Members can connect with regional and community based practice networks

3. **Education & Training:** Members can access a variety of workforce development and mentoring programs and apply for formal training programs.

4. **Funding:** Members can apply for local and national pilot grants and other funding opportunities. ITHS also offers letters of support for grant submissions.

# Contact our Director of Research Development

- **Project Consultation**
- **Strategic Direction**
- **Resources and Networking**

**Melissa D. Vaught, Ph.D.**
**ithsnav@uw.edu**
**206.616.3875**

# Feedback

At the end of the seminar, a link to the feedback survey will be sent to the email address you used to register.

Career Development Series 2021

# Evidence Synthesis Primer: A Step by Step Guide (Part 1)

**Presented by Kenn B. Daratha, PhD**

Providence Sacred Heart Medical Center
Gonzaga University Nurse Anesthesia Program

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# Learning Objectives

1. Attendees will be able to retrieve the relevant research evidence supporting a clinical question.
2. Attendees will be able to critically appraise the selected research evidence.
3. Attendees will be able to synthesize the research evidence to answer a clinical question.

# Clinical Questions

Most clinical questions arise when observing variability in practice:

- Long held beliefs
- Learned during our training
- Success stories of our colleagues
- Publication
- We have always done it that way
- Compelling evidence forces us to consider an intervention

# Is Evidence Informing Practice?

Evid Based Med. 2017 Jun;22(3):88-92. doi: 10.1136/ebmed-2017-110704. Epub 2017 May 29.

## How good is the evidence to support primary care practice?

Mark H Ebell [1], Randi Sokol [2], Aaron Lee [1], Christopher Simons [3], Jessica Early [2]

Affiliations + expand

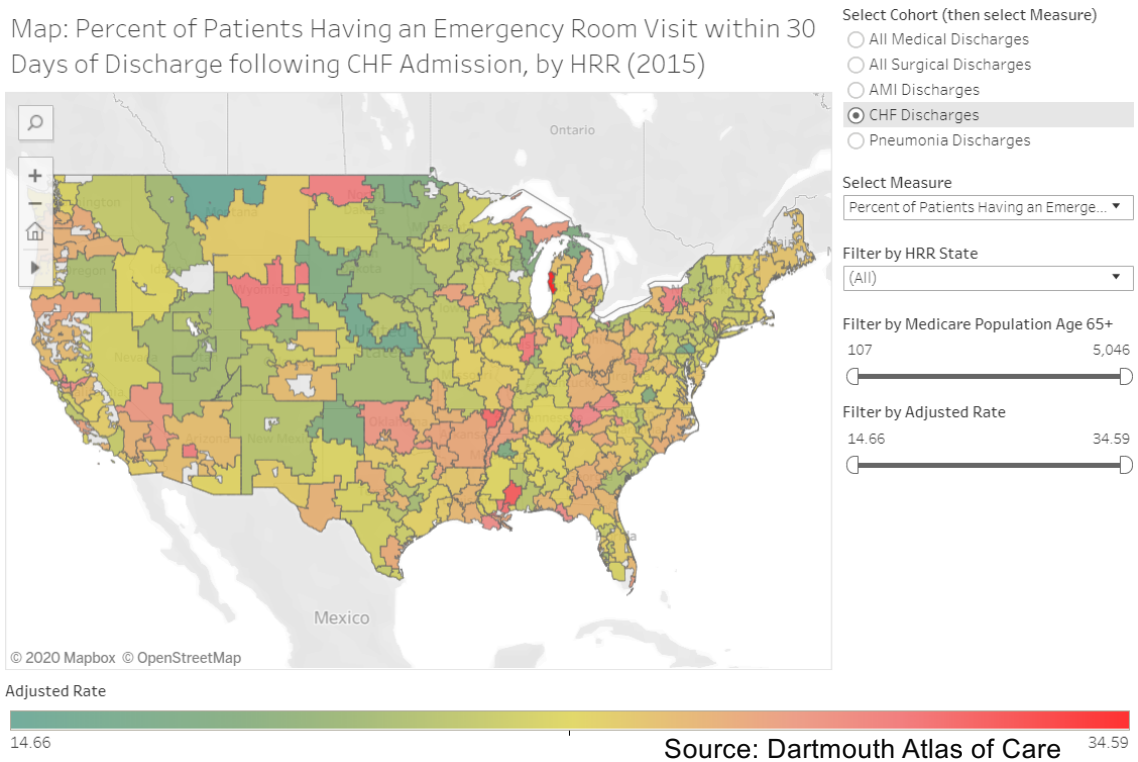
PMID: 28554944 DOI: 10.1136/ebmed-2017-110704

### Abstract

Our goal was to determine the extent to which recommendations for primary care practice are informed by high-quality research-based evidence, and the extent to which they are based on evidence of improved health outcomes (patient-oriented evidence). As a substrate for study, we used Essential Evidence, an online, evidence-based, medical reference for generalists. Each of the 721 chapters makes overall recommendations for practice that are graded A, B or C using the Strength of Recommendations Taxonomy (SORT). SORT A represents consistent and good quality patient-oriented evidence; SORT B is inconsistent or limited quality patient-oriented evidence and SORT C is expert opinion, usual practice or recommendations relying on surrogate or intermediate outcomes. Pairs of researchers abstracted the evidence ratings for each chapter in tandem, with discrepancies resolved by the lead author. Of 3251 overall recommendations, 18% were graded 'A', 34% were 'B' and 49% were 'C'. Clinical categories with the most 'A' recommendations were pregnancy and childbirth, cardiovascular, and psychiatric; those with the least were haematological, musculoskeletal and rheumatological, and poisoning and toxicity. 'A' level recommendations were most common for therapy and least common for diagnosis. Only 51% of recommendations are based on studies reporting patient-oriented outcomes, such as morbidity, mortality, quality of life or symptom reduction. In conclusion, approximately half of the recommendations for primary care practice are based on patient-oriented evidence, but only 18% are based on patient-oriented evidence from consistent, high-quality studies.

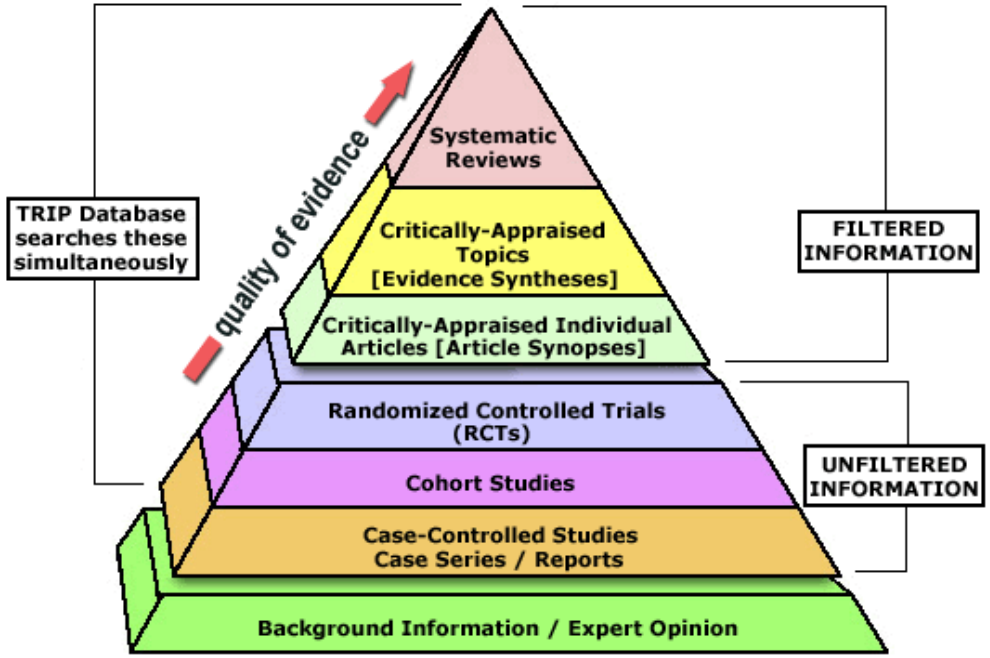
**Keywords:** Health services administration & management; Primary care; Quality in health care.

# Outcomes Variability




Source: Dartmouth Atlas of Care

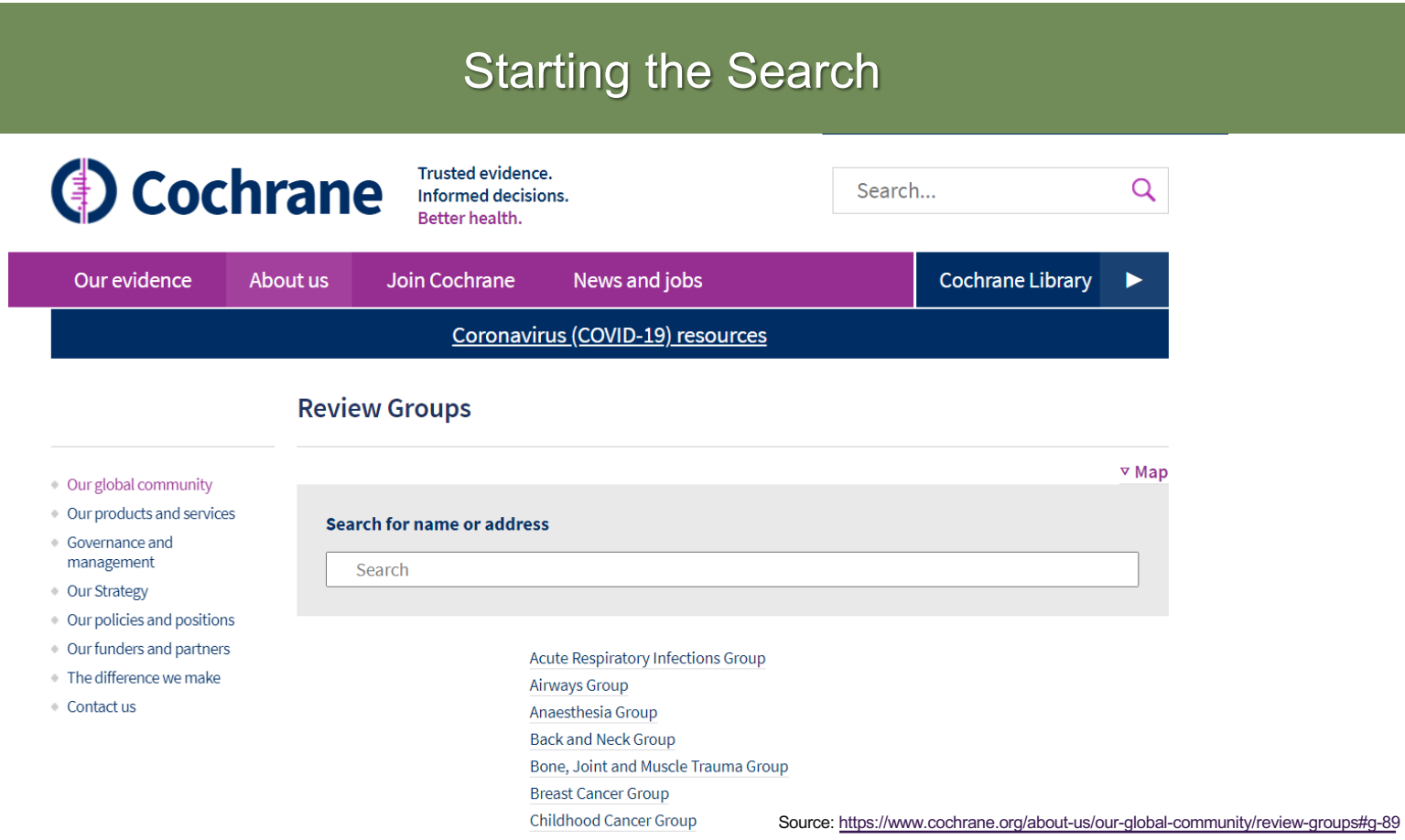
# Evidence Pyramid



# PICO/PICOT

- P – Patient or Problem
- I – Intervention
- C – Comparison
- O – Outcome
- T - Time

# Starting the Search

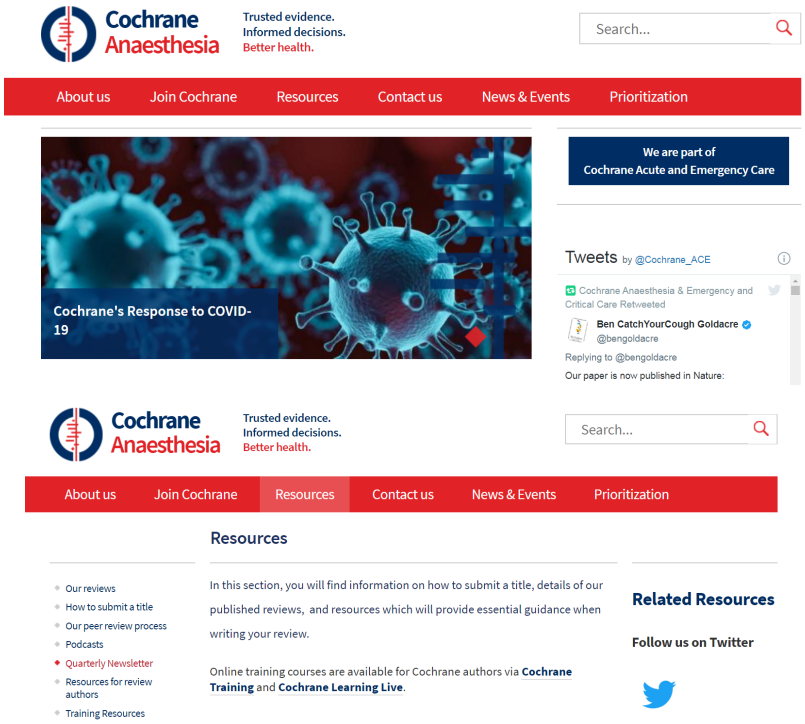



Source: https://www.cochrane.org/about-us/our-global-community/review-groups#g-89

# Starting the Search

Example

- https://carg.cochrane.org/
- Select Resources
- Select Our Reviews
- 134 Reviews
- Ctrl/F to Search Titles



# Workshop Exercise


- Review the Cochrane Review Groups
- https://www.cochrane.org/about-us/our-global-community/review-groups#g-89
- Select a Review Group and follow link to website
- Navigate to ‘Our reviews’
- Ctrl/F to search ‘P’, ‘I’ and ‘O’
- Read the abstract and plain language summary of the Cochrane Review
- Take note of version published date

# MEDLINE

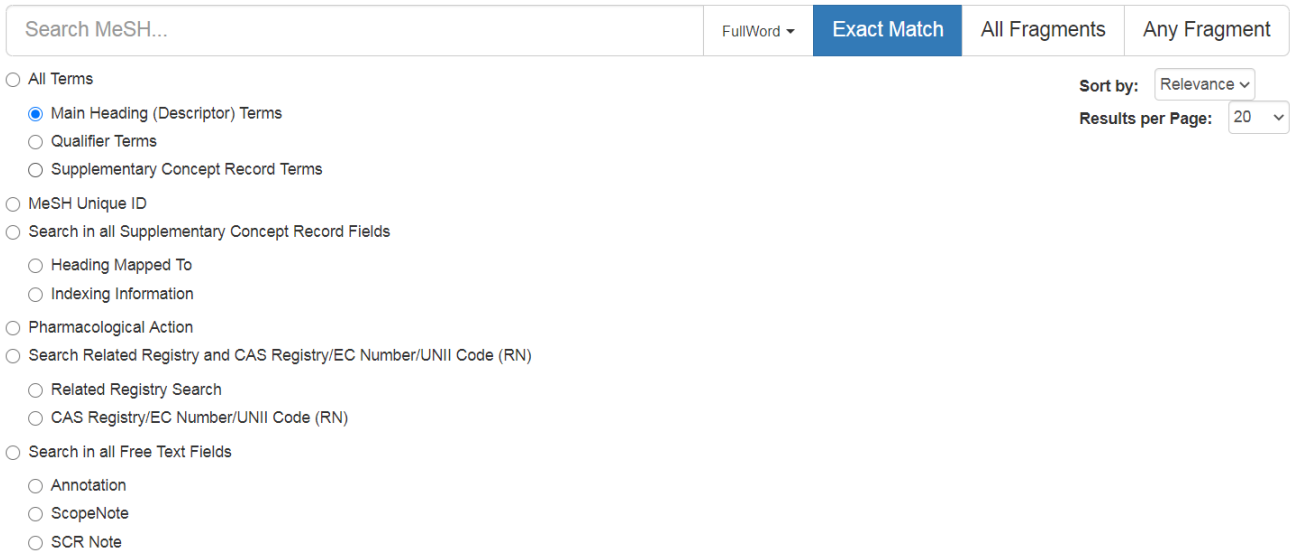
- National Library of Medicine Journal Citation Database
- 26 million references to biomedical and life science journals
- Citations from more than 5,200 journals
- Accessible through PubMed (pubmed.gov)
- Medical Subject Headings (MeSH) index citations
- Browse MeSH terms (https://meshb.nlm.nih.gov/search)

Source: https://www.nlm.nih.gov/bsd/difference.html

# MeSH

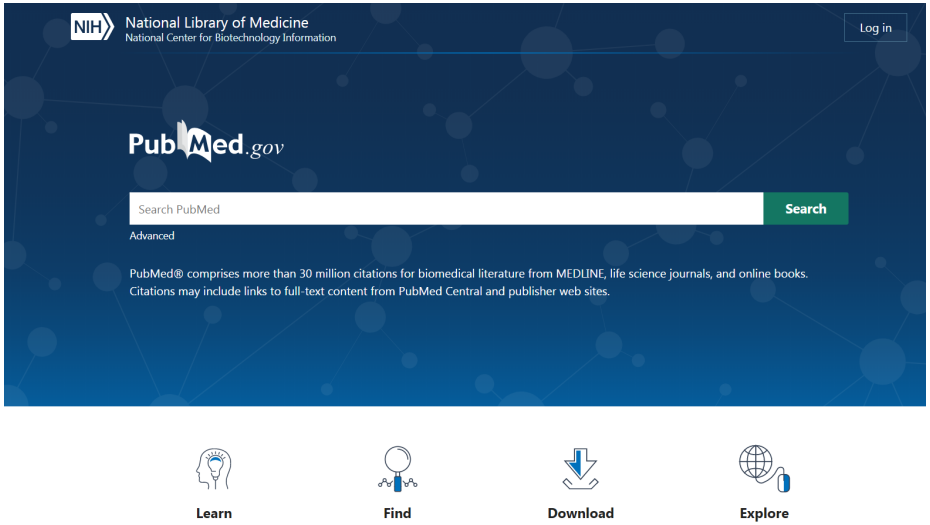
## Medical Subject Headings 2020

The files are updated each week day Monday-Friday by 8AM EST



# PubMed

- Search MEDLINE using PubMed with combinations of ‘P’, ‘I’ and ‘O’ terms from your PICO/PICOT formatted questions.
- Indicate the term is a Mesh term by following with [mh]



# Workshop Demonstration

Clinical Question

- Among adults undergoing abdominal surgery, does intraoperative dexmedetomidine versus no dexmedetomidine administration, reduce postoperative narcotic requirements?

Cochrane Collaboration Review Group

- Perioperative dexmedetomidine for acute pain after abdominal surgery in adults – published 2/18/2016

MeSH Browser

- Dexmedetomidine and Analgesics, Opioid

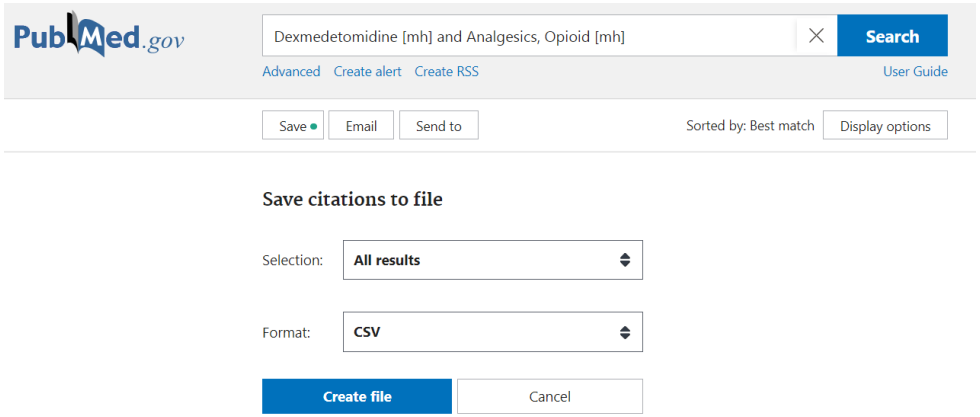
Search MEDLINE

- Dexmedetomidine [mh] and Analgesics, Opioid [mh]
- High quality evidence in last five years yields 86 candidate abstracts

# Workshop Exercise

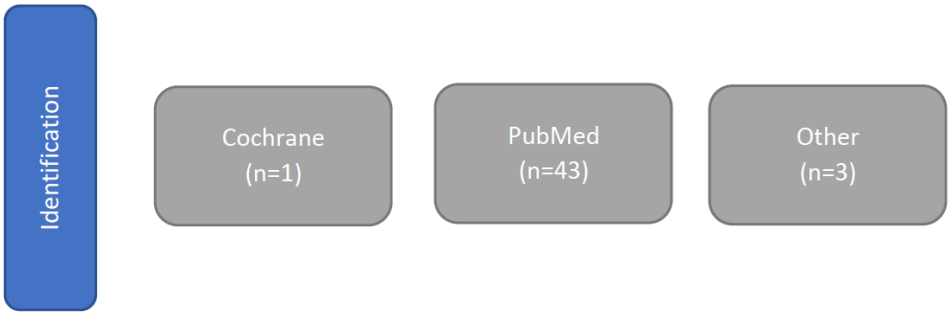

- Document a clinical question in a PICO/PICOT format
- Identify a Cochrane Collaboration Review Group and search for a review
- Develop a search strategy using the MeSH browser and searches of MEDLINE using PubMed
- Identify the number of the highest quality, contemporary abstracts

# Evidence Catalog



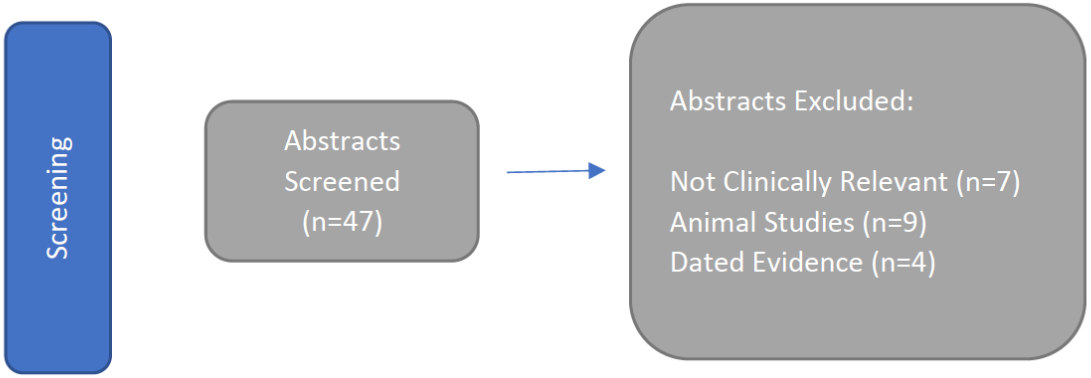

- Save candidate abstracts to a CSV file and open in MS-Excel (evidence catalog)
- Split screen to show evidence catalog and PubMed abstracts
- Add a column to your evidence catalog labeled exclusion
- Read each abstract and document exclusion (e.g. animal studies, non-English, care setting not applicable)

# Evidence Flow Diagram




- Document the source and number of abstracts identified
- Record the search strategy used for your MEDLINE searches
- Other sources may include EMBASE, Institute for Scientific Information (ISI), Web of Science and Cumulative Index to Nursing and Allied Health Literature (CINAHL), Google Scholar, or Journal Articles provided by colleagues

# Evidence Flow Diagram




- Count the number of exclusions by category as documented in your evidence catalog
- Update the screening section of your evidence flow diagram
- Secure PDF files and store in a folder (evidence library) for articles you wish to review
- Contact your librarian for assistance in securing full-text articles

# Critically Appraised Topic

| | |
|---|---|
| Reviewer Name: | Answer Key |
| Review Date: | 06/24/2020 |
| PMID: | 31645288 (Sessler) |
| Journal Article Title: | Recurrence of breast cancer after regional or general anesthesia: A randomized control trial (2019) |
| Clinical Question: | Among women undergoing potentially curative surgery for breast cancer, does using regional anesthesia compared to general anesthesia reduce risk for cancer recurrence? |
| Clinical Question Type: | ☒ Treatment<br>☐ Diagnosis<br>☐ Prognosis |
| Study Design: | Randomized Clinical Trial with 13 Hospitals throughout the world with a twelve-year follow-up. |
| Sample Size and Power: | 2132 patients 95% Retention Rate: Designed for 85% power to detect a 30% reduction in cancer recurrence. Stopping rules for efficacy and futility were established. |
| Validity Assessment: | Criteria / Assessment<br>Randomization: Patients were randomly placed into groups stratified by location site.<br>Blinding: Patients and physicians were blinded until right before surgery. Investigators were masked on group placement for postoperative follow up.<br>Baseline Group Comparability: Baseline Demographics comparable as demonstrated on Table 1 for demographics, tumor information, preoperative treatment, surgical information, intraoperative variables, and postoperative treatment.<br>Follow up: Followed for multiple years post-surgery. Mean follow-up period 36 months.<br>Intent to Treat: The primary analysis was assessed by Intent to treat principles. |
| Validity Summary: | After examining sample size, study power, randomization, blinding, follow up, and baseline group comparability, I deem this study valid for informing practice. |
| Clinical Importance of Findings: | Treatment: |

| | Recurrence | Follow-up (avg of recurrence) | P Value |
|---|---|---|---|
| Regional | 102/1043 (10%) | 36 (24-49) | 0.67 |
| General | 111/1065 (10%) | 36 (24-49) | |

No difference in breast cancer recurrence between regional and general anesthesia.

- Read and assess each full-text article you have chosen to include in your review
- I record my assessment findings in a critically appraised topic (CAT)
- Assess design, power, study validity (five criteria) and clinical importance of study findings

# Critically Appraised Topic

- In seeking answers to treatment questions, the study design must be randomized
- Assess sample size and power
- In the highest quality evidence stopping rules for efficacy and futility will be established

| | |
|---|---|
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# Critically Appraised Topic

| | | |
|---|---|---|
| Validity Assessment: | Criteria | Assessment |
| | Randomization | Patients were randomly placed into groups stratified by location site. |
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| | Baseline Group Comparability | Baseline Demographics comparable as demonstrated on Table 1 for demographics, tumor information, preoperative treatment, surgical information, intraoperative variables, and postoperative treatment. |
| | Follow up | Followed for multiple years post-surgery. Mean follow-up period 36 months. |
| | Intent to Treat | The primary analysis was assessed by Intent to treat principles. |
| Validity Summary: | After examining sample size, study power, randomization, blinding, follow up, and baseline group comparability, I deem this study valid for informing practice. | |

# Critically Appraised Topic

- In highest quality evidence informing treatment questions, both treatment and harmful effects will be reported.
- NNT and NNH are the most commonly used statistics to understand treatment and harm.

Clinical Importance of Findings:

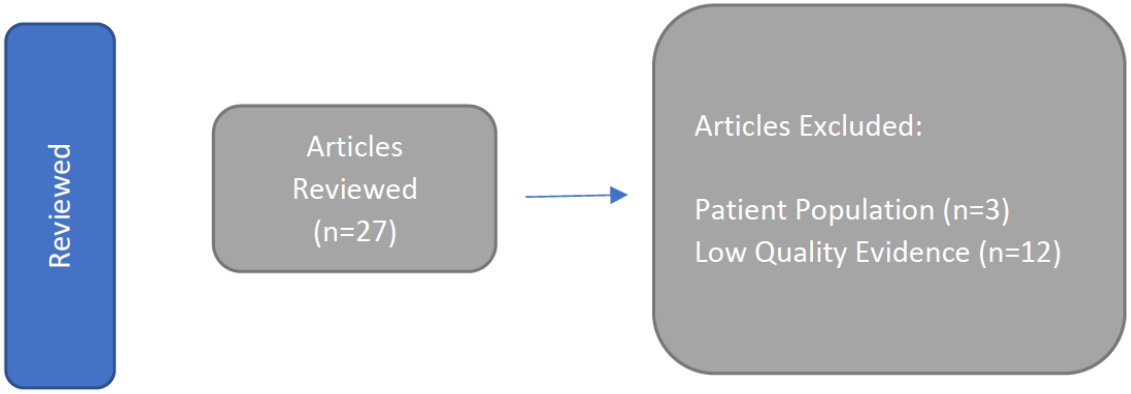
Treatment:

| | Recurrence | Follow-up (avg of recurrence) | P Value |
|---|---|---|---|
| Regional | 102/1043 (10%) | 36 (24-49) | 0.67 |
| General | 111/1065 (10%) | 36 (24-49) | |

No difference in breast cancer recurrence between regional and general anesthesia.

Harms:
Using regional anesthesia reduced opioid exposure, and reduced nausea/vomiting.

# Evidence Flow Diagram




- During your review of full-text articles, you will further exclude some articles from your literature synthesis.
- Document your exclusions in your evidence catalog.
- Common exclusion reasons following review of the research article is lack of clinical relevance and low quality of evidence.

# John Hopkins Nursing Evidence-Based Practice Grading

| Level of Evidence | Criteria | Quality Rating | Criteria |
|---|---|---|---|
| Level I | Systematic review of relevant randomized controlled trials with meta-analysis where possible. | A | Consistent results, sufficient sample size, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific evidence. |
| Level II | One or more well designed randomized controlled trials. | B | Reasonably consistent results, sufficient sample size, some control, and fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence. |
| Level III | Well-designed nonrandomized controlled trails OR from well designed cohort or case-control analytical studies, preferably multicenter or conducted at different times. | C | Little evidence with inconsistent results, insufficient sample size, conclusions cannot be drawn. |

Source:
John Hopkins Nursing
Evidence-Based Practice Grading

# Research Evidence Synthesis

- Write your evidence synthesis in four paragraphs (750-1000 words)
- Use thematic writing
- Use strong topic sentence
- Address
  - level and grade of evidence,
  - validity assessment,
  - summary of clinical findings,
  - consistency of clinical findings

# Questions?

**Kenn B. Daratha, PhD**

Providence Sacred Heart Medical Center/

Gonzaga University Nurse Anesthesia Program

Providence Medical Research Center

Kenn.Daratha@Providence.Org

# Thank You!

Open for Questions

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# Feedback Survey

A link to the feedback survey has been sent to the email address you used to register.

Please get out your device, find that email, and spend a few moments completing that survey before you leave today.

Tip: If on a mobile device, shift view to landscape view (sideways) for better user experience.