

# Introduction to Systematic Reviews for Librarians

Susan A. Fowler, MLIS

Library Director, Washington University in St. Louis  
Brown School: Social Work and Public Health

# Special Thank You to...

- Michelle Doering
- Laura Simon
- Lauren Yaeger
- Angela C. Hardi
- Margaret Foster

All were a part of creating the original content for this course.

# Briefly share your name and institution



1. Introduction
2. Librarian Role and Service
3. Search Bias and Recall
4. Term Harvesting
5. Designing and Evaluating Searches
6. Writing the Methods Section
7. Wrap Up, Follow Up, and Conclusion



## Learning Objectives

1. Define a Systematic Review
2. Differentiate 4 types of searching



# What is a Systematic Review?

A systematic review “attempts to collate all empirical evidence that fits pre-specified eligibility 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.”

Higgins JPT, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]. The Cochrane Collaboration, 2011. Available from [www.cochrane-handbook.org](http://www.cochrane-handbook.org), Section 1.2.2



# 4 Types of Searching

Type of Search	Purpose	Sources	Document	Skill Level
Preliminary Search	<ul style="list-style-type: none"><li>Identify existing reviews</li><li>Assess volume of potentially relevant studies</li><li>Locate at least 2-4 example articles that meet your review criteria</li></ul>	<ul style="list-style-type: none"><li>Scopus</li><li>Cochrane Library</li><li>PubMed</li></ul>	Sources searched and terms used (for research notes and to share with librarian)	Medium
Exhaustive Database Search	Identify all publications and as much grey literature as possible that meet study requirements	<ul style="list-style-type: none"><li>Scopus</li><li>Cochrane Library</li><li>Ovid Medline</li><li>Embase</li><li>CINAHL</li><li>Subject Specific Databases</li><li>Trial Registries</li></ul>	<ul style="list-style-type: none"><li>*Sources and Platforms</li><li>*Dates</li><li>*Applied Database Supplied Limits</li><li>* # Search Results</li><li>* Fully Reproducible Search</li></ul> <p>* = required for reporting in publications</p>	Advanced
Hand search	Identify grey literature like conference proceedings abstracts for posters and presented papers not indexed in online databases	<ul style="list-style-type: none"><li>Subject specific professional association websites</li><li>Major relevant journals</li><li>Bibliographies of all included studies</li><li>Bibliographies of on topic reviews</li></ul>	<ul style="list-style-type: none"><li>*Sources searched</li><li>*Dates</li><li>*# Search Results</li></ul> <p>* = required for reporting in publications</p>	Medium
Contact Experts	Identify unregistered studies with unpublished results or potential results		<ul style="list-style-type: none"><li>Names, dates, and methods of contact</li><li>All responses</li></ul>	



# Preliminary Searching - Researchers

## Purpose

- Identify existing reviews
- Assess volume of potentially relevant studies
- Locate at least 2-4 example articles that meet researcher's review criteria

## Sources

- Cochrane Library (for existing systematic reviews)
- PubMed
- Scopus

## Document

- Sources searched and terms used for research notes and to share with librarian





# Exhaustive Database Search - Librarians

### Purpose

- Identify all publications and as much grey literature as possible that meet study requirements

### Sources

- Scopus
- Cochrane Library
- Ovid Medline
- Embase
- CINAHL
- Subject Specific Databases
- Trial Registries

# Exhaustive Database Search - Librarians

## Document

- Sources and Platforms
- Dates
- Applied Database Supplied Limits
- Search Results
- Completely Replicable Search

All are required for reporting in publications.



# Hand Search - Researchers

### Purpose

- Identify grey literature like conference proceedings abstracts for posters and presented papers not indexed in online databases

### Sources

- Subject specific professional association websites
- Major relevant journals
- Bibliographies of all included studies
- Bibliographies of on topic reviews

### Document

- Sources searched
- Dates
- # of Search Results

**All are required for reporting in publications.**



# Contact Experts - Researchers

## Purpose

- Identify unregistered studies with unpublished results or potential results

## Document

- Names
- Dates
- Methods of contact
- All responses

## Lesson 01

## Guidelines

guide/standard	protocol development	protocol report	conduct review	report review	Update review	appraise
Cochrane Handbook Methodological Expectations of Cochrane Intervention Reviews (MECIR)	✓	✓	✓	✓	✓	
Standards for Systematic Reviews, Health and Medicine Division (HMD) The National Academies of Sciences, Engineering, and Medicine (previously Institute of Medicine)	✓	✓	✓	✓		
Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and PRISMA Extensions		✓		✓		
Peer Review of Electronic Search Strategies (PRESS)						✓
Best Evidence Medical Education (BEME)	✓	✓	✓	✓	✓	
Joanna Briggs Institute (JBI)	✓	✓	✓	✓	✓	
Methodological Expectations of Campbell Collaboration Intervention Reviews (MEC2IR)	✓	✓	✓	✓		
Risk of Bias in Systematic Reviews (ROBIS)						✓
A Measurement Tool to Assess Systematic Reviews (AMSTAR)						✓

Table by Margaret Foster

Dr. Levy is a new systematic review patron and is ready to meet with a librarian. What type of search should he have done/be doing?

### ANSWER CHOICE

- A Preliminary search
- B Exhaustive database search
- C Hand search
- D Contact experts

Questions?

# Librarian Role and Service

Presented by  
Susan Fowler, Director Brown School Library, MLIS

Created by: Susan Fowler, Director Brown School Library, MLIS

---



## Lesson 03 - Case Study Control Citation Record 1

Pediatric Cardiology

Volume 31, Issue 6, August 2010, Pages 807-812

### Analyses of left ventricular myocardial deformation by speckle-tracking imaging during the acute phase of Kawasaki disease (Article)

Yu, J.J.<sup>a</sup>, Choi, H.S.<sup>a</sup>, Kim, Y.B.<sup>a</sup>, Son, J.S.<sup>b</sup>, Kim, Y.-H.<sup>a</sup>, Ko, J.-K.<sup>a</sup>, Park, I.-S.<sup>a</sup>

<sup>a</sup> Division of Pediatric Cardiology, College of Medicine, University of Ulsan, 388-1 Pungnap-2dong, Songpagu, Seoul 138736, South Korea

#### Abstract

This study aimed to investigate left ventricular myocardial deformation in children with Kawasaki disease during the acute phase of their illness. A total of 50 patients and 35 normal control subjects were assessed. Data were obtained from the patients during the acute and convalescent phases of Kawasaki disease. Analyses of myocardial deformation [strain ( $\epsilon$ ), strain rate (SR)] was performed using two-dimensional speckle-tracking imaging in three directions (longitudinal, circumferential, and radial) at the basal and mid levels of the left ventricular myocardium. Basal longitudinal  $\epsilon$  ( $P < 0.001$ ) and midlongitudinal  $\epsilon$  ( $P < 0.0001$ ) were lower during the acute phase of the disease than in the control subjects and associated with serum albumin level and left ventricular mass index (LVMI). Midlongitudinal SR ( $P < 0.0001$ ) was lower during the acute phase of Kawasaki disease than in the control subjects and associated with LVMI. Decreased systolic SR was not detected in any direction. In conclusion, left ventricular longitudinal systolic  $\epsilon$  was significantly decreased during the acute phase of Kawasaki disease. This may be a result of myocardial swelling from myocarditis during the acute phase of the disease. © 2010 Springer Science+Business Media, LLC.

#### Author keywords

Kawasaki disease; Myocarditis; Strain

#### Indexed keywords

**EMTREE** medical terms: acute disease; article; child; controlled study; disease association; Doppler echocardiography; female; heart left ventricle function; human; left ventricular myocardial deformation; major clinical study; male; mucocutaneous lymph node syndrome; myocardial disease; myocarditis; preschool child; clinical trial; comparative study; complication; disease course; echography; follow up; heart atrium; heart contraction; heart ventricle; mucocutaneous lymph node syndrome; multicenter study; myocarditis; pathophysiology; physiology; procedures; prognosis; reproducibility; retrospective study

**MeSH:** Acute Disease; Child, Preschool; Disease Progression; Echocardiography, Doppler; Female; Follow-Up Studies; Heart Atria; Heart Ventricles; Humans; Male; Mucocutaneous Lymph Node Syndrome; Myocardial Contraction; Myocarditis; Prognosis; Reproducibility of Results; Retrospective Studies

*Medline is the source for the MeSH terms of this document.*

ISSN: 01720643

CODEN: PECAD

Source Type: Journal

Original language: English

DOI: 10.1007/s00246-010-9708-7

PubMed ID: 20405115

Document Type: Article

## Lesson 03 - Case Study Control Citation Record 2

Journal of the American Society of Echocardiography  
Volume 23, Issue 6, June 2010, Pages 673-679

### Two-Dimensional Speckle Strain and Dyssynchrony in Single Right Ventricles Versus Normal Right Ventricles (Article)

Moiduddin, N.<sup>a</sup>, Texter, K.M.<sup>a</sup>, Zaidi, A.N.<sup>ab</sup>, Hershenson, J.A.<sup>a</sup>, Stefaniak, C.A.<sup>a</sup>, Hayes, J.<sup>c</sup>, Cua, C.L.<sup>a</sup>

<sup>a</sup> Heart Center, Nationwide Children's Hospital, Columbus, OH, United States

<sup>b</sup> Division of Cardiovascular Medicine, Davis Heart and Lung Research Institute, The Ohio State University Medical Center, Columbus, OH, United States

<sup>c</sup> Pacific University, Forest Grove, OR, United States

#### Abstract

**Background:** Patients with single-right ventricle (RV) physiology are at increased risk for myocardial dysfunction and mechanical dyssynchrony. Newer echocardiographic modalities may be better able to quantitate right ventricular function in this unique population. The aim of this study was to use two-dimensional speckle analysis of strain and strain rate to quantify systolic function and dyssynchrony in single-RV post-Fontan patients and compare them with values for controls. **Methods:** Patients with single RV who underwent Fontan palliation and patients with normal biventricular anatomy were studied. Two-dimensional speckle echocardiography was used to measure strain, strain rate, time to peak, and longitudinal displacement in a 6-segment model of the RV. Independent t tests were used to compare group means. P values < .05 were considered significant. **Results:** Thirteen patients were studied in each group. There was no significant difference in age between single-RV patients and controls ( $6.60 \pm 2.07$  vs  $5.75 \pm 1.83$  years, respectively). Single-RV strain values were significantly lower in all 6 segments compared with values in controls (basal interventricular septum [IVS],  $-14.28 \pm 7.78\%$  vs  $-22.00 \pm 2.36\%$ ; mid IVS,  $-17.70 \pm 4.54\%$  vs  $-22.99 \pm 2.71\%$ ; apical IVS,  $-19.46 \pm 4.97\%$  vs  $-25.42 \pm 4.06\%$ ; basal RV,  $-22.40 \pm 5.7\%$  vs  $-41.42 \pm 5.42\%$ ; mid RV,  $-21.20 \pm 3.21\%$  vs  $-39.67 \pm 6.04\%$ ; apical RV,  $-20.70 \pm 4.90\%$  vs  $-33.68 \pm 3.90\%$ ). Systolic strain rate and longitudinal displacement were also lower in the free wall and apical IVS in single-RV patients compared with controls. The modified Yu index for strain time to peak was longer in the single-RV patients ( $43.16 \pm 13.63$  vs  $21.72 \pm 7.25$  ms). **Conclusion:** Significant differences in strain analysis between single-RV patients and patients with biventricular physiology exist at a relatively young age. Future studies are needed to determine the clinical significance of these differences. © 2010 American Society of Echocardiography.

#### Author keywords

Dyssynchrony; Echocardiography; Single ventricle; Strain

#### Indexed keywords

**EMTREE drug terms:** digoxin; enalapril

**EMTREE medical terms:** adolescent; apical membrane; article; clinical article; controlled study; evoked response; Fontan procedure; heart right ventricle function; heart right ventricle infarction; heart right ventricle overload; heart ventricle wall; human; image analysis; intermethod comparison; single right ventricle disease; systolic blood pressure; two dimensional echocardiography; two dimensional speckle strain

**MeSH:** Child; Child, Preschool; Echocardiography; Fontan Procedure; Heart Defects, Congenital; Heart Ventricles; Humans; Systole; Ventricular Dysfunction, Right

*Medline is the source for the MeSH terms of this document.*

ISSN: 0894-7317 CODEN: PECAD Source Type: Journal Original language: English

DOI: 10.1016/j.echo.2010.03.028 PubMed ID: 20409684 Document Type: Article

## Systematic Review Search Request

**PICO Statement:** What are the normal ranges of left ventricle global longitudinal strain derived by two dimensional speckle tracking echocardiography in neonates?

**P:** neonates with left ventricle strain

**I:** by two dimensional speckle tracking echocardiography

**C:** not required

**O:** normal ranges

**Cochrane Library Search: Systematic Review already published? Y**

**If Yes - Citation:** Prognostic implications of global LV dysfunction: a systematic review and meta-analysis of global longitudinal strain and ejection fraction (2014)

**If Yes, how will yours improve on what has already been done?** Ours will not be limited to observational studies but will be limited to the pediatric population. Ours will include trained librarians to conduct a more thorough search and include grey literature resources.

**Inclusion Criteria:** neonates, Humans

**Exclusion Criteria:** Adults, Animals

**Control articles found via preliminary search (Please list 2 minimum, but include more citations if you have them)**

**Article Citation 1:**

Cheung EW1, Liang XC, Lam WW, Cheung YF. (2009) Impact of right ventricular dilation on left ventricular myocardial deformation in patients after surgical repair of tetralogy of fallot. Am J Cardiol. 2009 Nov 1;104(9):1264-70. doi: 10.1016/j.amjcard.2009.06.043.

**Article Citation 2:**

Moiduddin N1, Texter KM, Zaidi AN, Hershenson JA, Stefaniak CA, Hayes J, Cua CL. (2010) Two-dimensional speckle strain and dyssynchrony in single right ventricles versus normal right ventricles. J Am Soc Echocardiogr. 2010 Jun;23(6):673-9. doi: 10.1016/j.echo.2010.03.028. Epub 2010 Apr 21.

**Article Citation 3:**

Yu JJ1, Choi HS, Kim YB, Son JS, Kim YH, Ko JK, Park IS. (2010) Analyses of left ventricular myocardial deformation by speckle-tracking imaging during the acute phase of Kawasaki disease. Pediatr Cardiol. 2010 Aug;31(6):807-12. doi: 10.1007/s00246-010-9708-7. Epub 2010 Apr 20.

## **Learning Objectives**

1. Construct a search plan
2. Establish communication strategies with patron
3. Compose control search
4. Critically analyze researcher's question against provided control articles
5. Develop documentation strategy



# Initial Patron Contact

Hi Librarian,

I would like to do a systematic review on the effectiveness of screening tools to identify risk factors in elderly patients who visit the emergency room.

Thanks,

Dr. Carpenter



# Librarian Reply

Dear Dr. Carpenter:

I would be happy to work on your systematic review team designing the search strategy. Our service includes a thorough search strategy designed to capture all evidence related to your research question translated across at least three databases and two grey literature resources. We use guidelines from the Institute of Medicine, Cochrane, and PRISMA. We typically send search results to you in an EndNote library and excel spreadsheet along with a written methods section that can be used in your final reporting manuscript. So that I have all the information I need to get started, please fill out the [Systematic Review Request Form](#). Thank you!

Sincerely,

Librarian

# Search Request Form

## Systematic Review Search Request

For assistance please contact Debbie Thomas at [dathomas@wustl.edu](mailto:dathomas@wustl.edu)

Name: Dr. Carpenter

Email: [Carpenter@med.com](mailto:Carpenter@med.com)

**PICO Statement:** How effective are various screening tools to identify risk factors (hospital readmission, mortality, quality of life, level of independence, risk of falling, etc...) in elderly patients who visit the emergency room

P: Elderly patients in the emergency room

I: Screening tools

C: not required

O: Effectiveness in determining risk factors

Cochrane Library Search: Systematic Review already published? N

If Yes - Citation:

If Yes, how will yours improve on what has already been done?

Inclusion Criteria: Elderly 65+, humans

Exclusion Criteria: Adults, Children, animals

Benchmark articles found via preliminary search (please list all articles you already plan to include in your review, you must have a minimum of two but if you have more please list all of them)...

### Article Citation 1:

Eur J Emerg Med. 2007 Dec;14(6):315-23. Screening for risk of readmission of patients aged 65 years and above after discharge from the emergency department: predictive value of four instruments. Moons P1, De Ridder K, Geyskens K, Sabbe M, Braes T, Flamaing J, Milisen K.

### Article Citation 2:

Eur J Emerg Med. 2011 Aug;18(4):215-20. doi: 10.1097/MEJ.0b013e328344597e. Risk for poor outcomes in older patients discharged from an emergency department: feasibility of four screening instruments. Buurman BM1, van den Berg W, Korevaar JC, Milisen K, de Haan RJ, de Rooij SE.

Yu JJ1, Choi HS, Kim YB, Son JS, Kim YH, Ko JK, Park IS. (2010) Analyses of left ventricular myocardial deformation by speckle-tracking imaging during the acute phase of Kawasaki disease. Pediatr Cardiol. 2010 Aug;31(6):807-12. doi: 10.1007/s00246-010-9708-7. Epub 2010 Apr 20.

# Question Frameworks

- Health
  - PICO (patient/problem, intervention, comparison if applicable, outcome)
- Public Health
  - PEO (population, exposure, outcome)
- Social Sciences
  - PICOC (population, intervention, comparison, outcome, context)
  - SPICE (Setting, Perspective, Interest, Comparison, Evaluation)
- Interdisciplinary
  - WWH (who, what, how)



# Librarian Use of Frameworks

- Don't get too caught up with question frameworks, they are tools...
  - help researchers think through their question to identify
    - Separate distinct elements
    - How those elements are related...
- This helps you, as the librarian, figure out where the Booleans go





# PICO

- Problem or Patient
- Intervention
- Comparison (when applicable)
- Outcome

**PICO Statement:** How effective are various screening tools to identify risk factors (hospital readmission, mortality, quality of life, level of independence, risk of falling, etc...) in elderly patients who visit the emergency room

**P:** Elderly patients in the emergency room

**I:** Screening tools

**C:** not required

**O:** Effectiveness in determining risk factors

# Boolean and Nesting Applied to PICO

P : “standardized index term” **OR** “synonym”

**AND**

I : “standardized index term” **OR** “synonym”

**OR**

C (not required)

**AND**

O: “standardized index term” **OR** “synonym”

**P AND (I OR C) AND O**

# Boolean and Nesting Applied to PICO

P: exp Emergency Service, Hospital/ **OR** emergenc\*

**AND**

I: exp Risk Assessment/ **OR** “screening tool”

**OR**

C (not required)

**AND**

O: exp Patient Readmission/ **OR** revisit\*

**P AND (I OR C) AND O**

# Systematic Review already published?

Cochrane Library Search: Systematic Review already published? N

If Yes - Citation:

If Yes, how will yours improve on what has already been done?

- It is not uncommon for researchers to not be aware or to have not looked to see if a systematic review on their topic has already published.
- Even if they say “No,” on the request form, you should look anyway.
- If there has been a systematic review already published, that doesn’t mean they can’t do their own but it does mean they may want to refine their question or plan on how their review will add something to the body of literature that already exists.



# Inclusion and Exclusion Criteria

**Inclusion Criteria:** Elderly 65+, humans

**Exclusion Criteria:** Adults, Children, animals

Inclusion and exclusion criteria will help researchers filter through studies to determine which are applicable to their review. Sometimes these criteria can be controlled for with the search.

Typical examples...

- Age limits
  - Include children aged 0-18
  - Exclude adults age 19+
- Study types
  - Include RCTs
  - Exclude letters
- Humans
  - Include humans
  - Exclude animal only studies

# Control Articles

Control Articles found via preliminary search (please list all articles you already plan to include in your review, you must have a minimum of two but if you have more please list all of them)...

- Come from patrons via their preliminary search, articles they are already planning on including in their review
- Direct you to the best databases to search by seeing which databases the articles are indexed in (journal website, Ulrich's periodical index)
- Provide sources from which to harvest search terms
- Reveal potential issues with research question and allow basis for follow up reference questions, thereby avoiding time wasted on designing the wrong search strategy
- Serve as test to run search strategy against to be sure that your search strategy is retrieving all control articles



# Record Keeping System

It is essential to have a good record keeping system before you do anything else. Your record keeping system should enable you to record...

1. Patron's PICO Statement
2. Inclusion and Exclusion criteria that you suspect can be controlled for with the strategy
3. PICO Search Plan
4. Control articles and search
5. Notes on decisions regarding changes to research question, PICO Search Plan, Control Articles etc...
6. Concept hedges for each database

## Becker Library Librarian Systematic Review Work Form

Patron Name:

Patron PICO Statement:

Inclusion and Exclusion Criteria  
that can be controlled for with search:

PICO Search Plan: Concept 1 AND Concept 2 AND Concept 3

Control Articles 9036577[uid] OR 17438710[uid] OR 21479209[uid] OR 18667388[uid]

Notes regarding PICO vs Benchmark Articles:

Concept Hedges for Each Database (Databases listed are just for examples. The databases you actually use may be different depending on topic)

### Concept Hedge 1

PubMed/Ovid Medline

Embase

AND

### Concept Hedge 2

PubMed/Ovid Medline

Embase

AND

### Concept Hedge 3

PubMed/Ovid Medline

Embase

# Search Plan

- Determine the concepts in the search question
- Plan how those concepts will be combined in the search strategy
- Match to Control articles
- This is your reference point – keep referring back to it throughout the search design process

# Search Plan cont...

Based on Dr. Carpenter's PICO Statement and inclusion and exclusion criteria, what might the Search Plan be?

**Patron Name:** Carpenter

**Patron PICO Statement:** How effective are various screening tools to identify risk factors (hospital readmission, mortality, quality of life, level of independence, risk of falling, etc...) in elderly patients who visit the emergency room

**Inclusion and Exclusion Criteria**

**that can be controlled for with search:** Humans, Senior Citizens

**PICO Search Plan:** Emergency Room AND Screening Tools AND Risk? AND Elderly 65+ AND Humans

# Hands On

## 3.1 Construct a Search Plan

## 3.1 Hands On - Construct a Search Plan

---

### Individual (5 min)

---

1. Refer to completed search request form
2. Record PICO Statement
3. Construct the Search Plan with the essential concepts from the question

---

### Group (5 min)

---

1. Discuss findings as a group
2. One group present to class

# Control

The control is a search of the PMIDs for the control articles provided by the patron. You will use this string in the future to test your concept hedges and search strategies.

Patron **PICO Statement:** How effective are various screening tools to identify risk factors (hospital readmission, mortality, quality of life, level of independence, risk of falling, etc...) in elderly patients who visit the emergency room

## **Inclusion and Exclusion Criteria**

**that can be controlled for with search:** Humans, Senior Citizens

**PICO Search Plan:** Emergency Room AND Screening Tools AND Risk? AND Elderly 65+ AND Humans

Control Articles     17968196[[uid](#)] OR 21317787[[uid](#)] OR 22730956[[uid](#)]

# Testing Your Search Plan

- Testing your Search Plan involves making sure each control article would be retrieved by such a search
- Checks that the search you design matches the intention of the research team
- To test your Search Plan, match the control articles with the Search Plan...

# Match Control to Search Plan

- Use control article citation records.
- Look for each concept in the Search Plan described somewhere in the title, abstract, and/or standardized index terms.
- Use a highlighter to highlight each concept. Make a note for any missing concepts.
- Does the Search Plan match each Control citation? If it does, great! But if not, now you have something to follow up on with your research team for clarification.



# Match Control to Search Plan

## Screening for risk of readmission of patients aged 65 years and above after discharge from the emergency department: Predictive value of four instruments

(Article)

Moons, P.<sup>ad</sup>, De Ridder, K.<sup>ab</sup>, Geyskens, K.<sup>a</sup>, Sabbe, M.<sup>b</sup>, Braes, T.<sup>ac</sup>, Flamaing, J.<sup>c</sup>, Milisen, K.<sup>ac</sup>

a Center for Health Services and Nursing Research, Katholieke Universiteit Leuven, Kapucijnenvoer, B-3000 Leuven, Belgium

b Emergency Department, University Hospitals Leuven, B-3000 Leuven, Belgium

c Department of Geriatric Medicine, University Hospitals Leuven, Herestraat 49, B-3000 Leuven, Belgium

### Abstract

**OBJECTIVES:** To compare the abilities of four different screening tools to predict return visits of older persons after they have been discharged from the emergency department (ED). **METHODS:** We assessed 83 short-term (discharged within 24 h) patients (aged 65 years and above) who visited the ED of the University Hospitals Leuven, Belgium, from 15 October 2005 to 24 December 2005. The Identification of Seniors at Risk (ISAR), the Triage Risk Screening Tool (TRST), the eight-item questionnaire of Runciman, and the seven-item questionnaire of Rowland were administered at admission to screen the patients for risk factors of future ED readmission. By telephone follow-up 14, 30, and 90 days after discharge from the ED, we asked the patients (or their families) whether readmission had occurred since their initial discharge from the ED. **RESULTS:** Readmission rates were 10%, 15.8%, and 32.5% after 14, 30, and 90 days, respectively. When using three or more positive answers as the cutoff scores, the Rowland questionnaire proved to be the most accurate predictive tool with a sensitivity of 88%, specificity of 72%, and negative predictive value of 98% at 14 days after discharge. Thirty days after discharge, the sensitivity was 73%, specificity was 75%, and negative predictive value was 92%. **CONCLUSION:** Repeat visits in older persons admitted to an ED seemed to be most accurately predicted by using the Rowland questionnaire, with an acceptable number of false positives. This instrument can be easily integrated into the standard nursing assessment. © 2007 Lippincott Williams & Wilkins, Inc.

### Author keywords

Diagnostic tests; Emergency department; Geriatric; Patient readmission

### Indexed keywords

**EMTREE medical terms:** age distribution; aged; article; Belgium; clinical assessment; clinical assessment tool; controlled study; data analysis; demography; emergency health service; emergency ward; female; follow up; hospital admission; hospital discharge; hospital readmission; human; Identification of Seniors at Risk; intermethod comparison; major clinical study; male; patient selection; predictive validity; priority journal; questionnaire; Rowland questionnaire; Runciman questionnaire; scoring system; screening; sensitivity and specificity; telephone; triage risk screening tool

**MeSH:** Age Factors; Aged; Aged, 80 and over; Belgium; Emergency Service, Hospital; Female; Geriatric Assessment; Health Care Surveys; Hospitals, University; Humans; Male; Patient Discharge; Patient Readmission; Questionnaires; Risk Assessment; Time Factors; Triage

*Medline is the source for the MeSH terms of this document.*

ISSN: 09699546 Source Type: Journal Original language: English

DOI: 10.1097/MEJ.0b013e3282aa3e45 PubMed ID: 17968196 Document Type: Article

# Hands On

## 3.2 Match Benchmarks to PICO Search Plan

# Hands On - Match Controls to Search Plan

---

## Individual (10-15 min)

---

1. Go through each benchmark article
  2. Highlight natural language and standard index terms that match PICO concepts
  3. Does each benchmark contain language that identifies each PICO concept?
  4. Note discrepancies and questions you will need to ask the patron to resolve the discrepancies
- 

## Group (5-10 min)

---

1. Discuss findings as a group
2. One group present to class

# Example Follow Up Email

Dear Dr. Levy:

In reviewing your example articles, I have observed that while all are about children, none are specifically about neonates. Is it okay to broaden the limit on age to include all children? Additionally, one article is about the right ventricle, not the left. Is it okay to broaden out to heart ventricle or would you prefer to leave this article out of your meta-analysis?

Please let me know how you would like me to proceed.

Thank you,  
Librarian

# Patron Reply

Hi Librarian,

Yes, I think that is a great idea to broaden out to children and ventricles.

Thanks,

Phil



# Update Work Form with Revised PICO Search Plan and Associated Notes

## Becker Library Librarian Systematic Review Work Form

**Patron Name:**

**Patron PICO Statement:** What are the normal ranges of left ventricle global longitudinal strain derived by two dimensional speckle tracking echocardiography in neonates?

**PICO Search Plan:** ~~left~~-ventricle AND speckle tracking echocardiography AND neonates OR children

**Control Articles**     [19840574\[uid\]](#) OR [20409684\[uid\]](#) OR [20405115\[uid\]](#)

**Notes** regarding **PICO** ~~vs~~ **Benchmark** Articles:

Asked patron about age and ~~left~~ ~~vs~~ right ventricle

Patron agreed to broaden age to children and to broaden left ventricle to heart ventricle.



# Record Keeping System cont...

## For each database search strategy...

1. Database and Interface
2. Date search was run
3. Any applied database supplied limits
4. Number of Search Results
5. Completely reproducible search strategies for each database

### Becker Library Librarian Systematic Review Work Form

#### Copy and Paste Search Strategies (Combined Concept Hedges)

With the exception of [clinicaltrials.gov](http://clinicaltrials.gov), these should work so that if you copy the entire search and paste it into the database, it will run and retrieve the number of results listed.

#### PubMed/Ovid Medline

Date Searched:

Applied Database Supplied Limits:

Number of Results:

Full Search Strategy:

#### Embase

Date Searched:

Applied Database Supplied Limits:

Number of Results:

Full Search Strategy:

#### ClinicalTrials.gov

Date Searched:

Number of Results:

Report, as accurately as possible, what you did. Searches in [Clinicaltrials.gov](http://Clinicaltrials.gov) must be much for simple than those used for other databases.

# Keeping Good Notes and Saving Your Bacon

It is important to keep accurate notes. That includes communication with your patron. This may save you down the line in case they suddenly change their question or they blame you for their search results. In such cases you can say something like...

“based on the email referenced below I believed this is what we agreed on. I can change the question, no problem, however, I will need to design a new strategy and that will take X amount of time. To be sure we are on the same page, the new question is Concept 1 AND Concept 2 AND Concept 3. Is that correct?”



# In Conclusion

- Start off on the right foot by establishing your role with your patron
- Keep notes on everything you do
- Develop a Search Plan
- Develop a Control Search
- Match Search Plan to Controls
- Follow Up with Your Patron Before Term Harvesting
- Revise Search Plan and/or Control Search in light of Patron Response

# Question!

When a patron initially contacts you regarding a systematic review, what are the pieces of information you need from them to move forward?

## ANSWER CHOICE

A

An Answerable Research Question

B

Inclusion and Exclusion Criteria

C

Example Articles They Are Planning to Include

D

All of the above

# Question!

In systematic review work, what are **control** articles? Choose all that apply...

## ANSWER CHOICE

A

Articles that provide a gold standard against which treatment guidelines are developed.

B

Articles researchers locate during their preliminary search that they plan to use in their systematic review.

C

Articles librarians can use to test their systematic review search strategies against.

D

Articles from which librarian can harvest terms for their search strategies.

# Questions

# MINIMIZING BIAS IN THE SEARCH

Margaret Foster, MS, MPH, AHIP

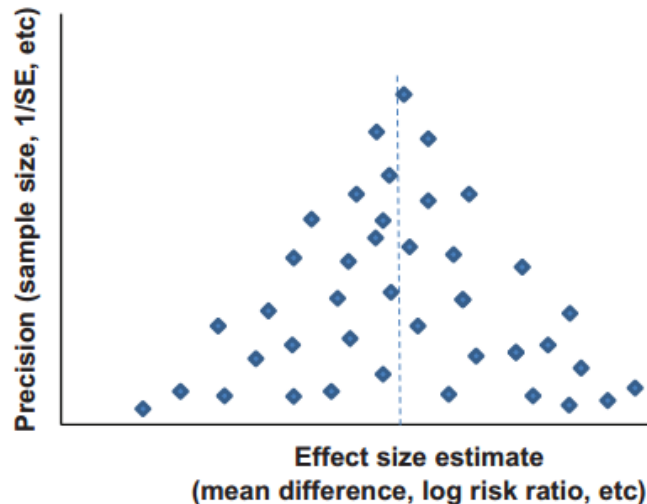
- goal of a systematic review literature search is to find all relevant studies for the research question.
- Problem- we have no idea what that number is
- Solution- best practices and guidelines

- **Publication Bias:** The results of the study influences whether the author or journal editor is willing to publish the article
- Unpublished studies with negative/harmful/null results can potentially synthesis

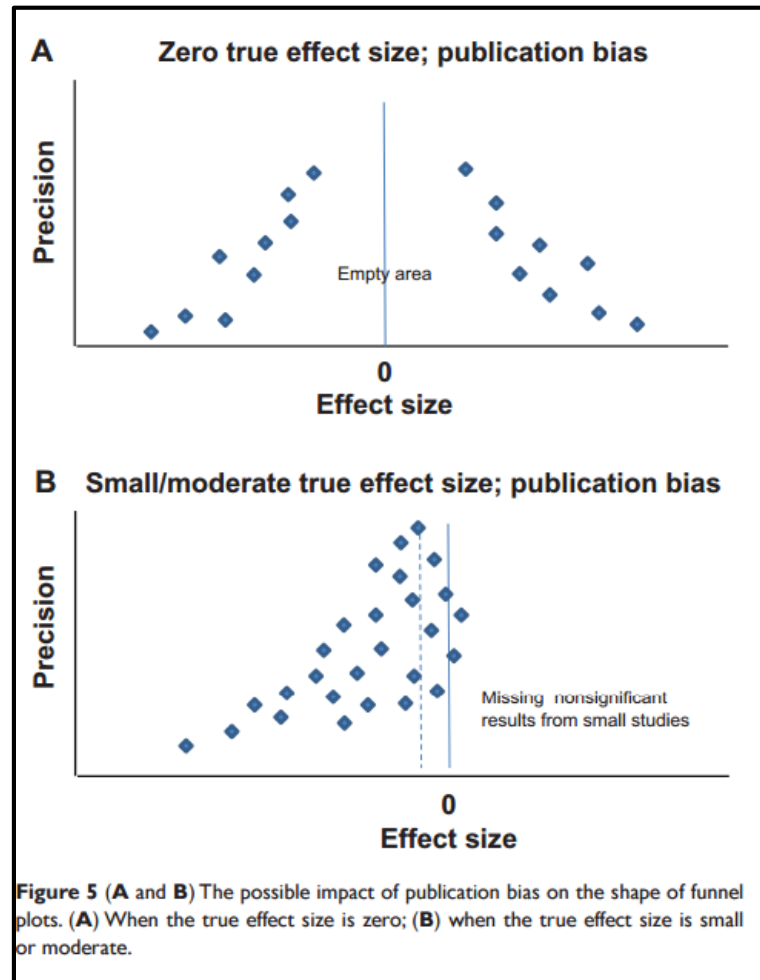


## Funnel plots

- Balanced- no bias
- Unbalanced- there is an issue



**Figure 4** Funnel-plot illustration with sufficient number of nonbiased studies. Each point represents a study in a meta-analysis.

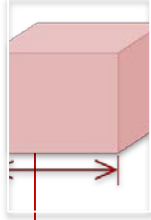


**Figure 5 (A and B)** The possible impact of publication bias on the shape of funnel plots. (A) When the true effect size is zero; (B) when the true effect size is small or moderate.



## Lesson 4

# Known situations



### Truncation bias

- Study is published in a briefer form with less details



### Selective outcome reporting bias

- Selective reporting of some outcomes but not others



### Time-lag bias

- Delayed publication of findings



### Location bias

- journals with different ease of access/levels of indexing in standard databases



### Language bias

- More likely to be published in English



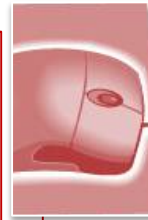
### Multiple (duplicate) publications

- Multiple/single publications



### Citation bias

- Citation/non-citation of research findings



### Database bias

- Some databases are more likely to index certain languages/journals

- Select appropriate databases to search (must be more than just Medline)
  - No consensus on how many
  - When you no longer see new studies
- Conduct a comprehensive search in each resource
- Select other resources to search
  - Grey literature
  - References of included studies
  - Advertise for studies



# MECIR Standards

■ Mandatory

■ Highly desirable

**C24**

- Search Medline, Embase, Cochrane CENTRAL

**C25**

- Searching specialist databases

**C26**

- Searching for different types of evidence

**C27**

- Searching trials registers

**C28**

- Searching for grey literature

**C29**

- Searching within other reviews

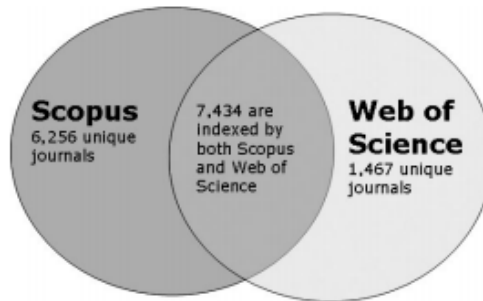
**C30**

- Searching with reference lists

**C31**

- Searching by contacting relevant individuals and organizations

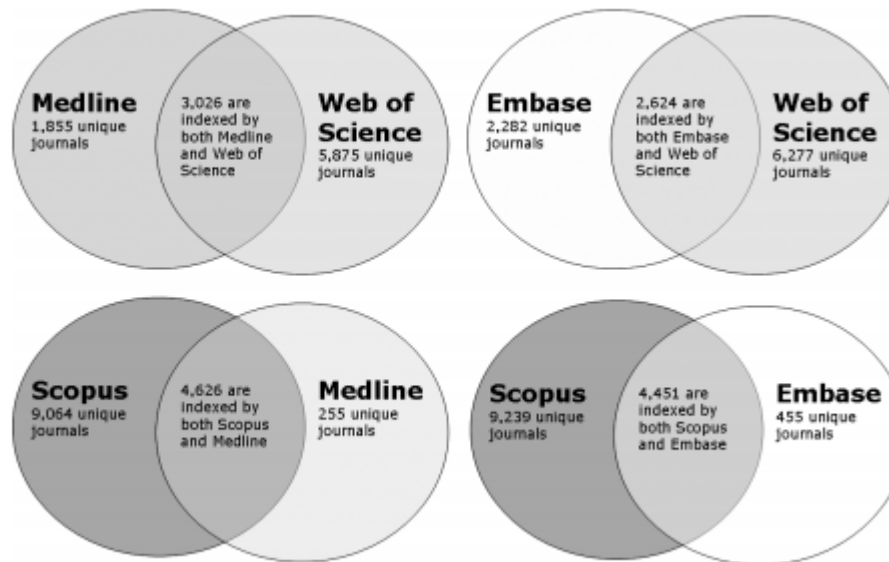
# Database Selection: Why More than One?



**Figure 1.**  
Overlap of active journal titles (source type "journal" only) between the citation databases. 84 per cent of the WoS titles are also indexed in Scopus. 54 per cent of the Scopus titles are also indexed in WoS

OIR  
32,1

18



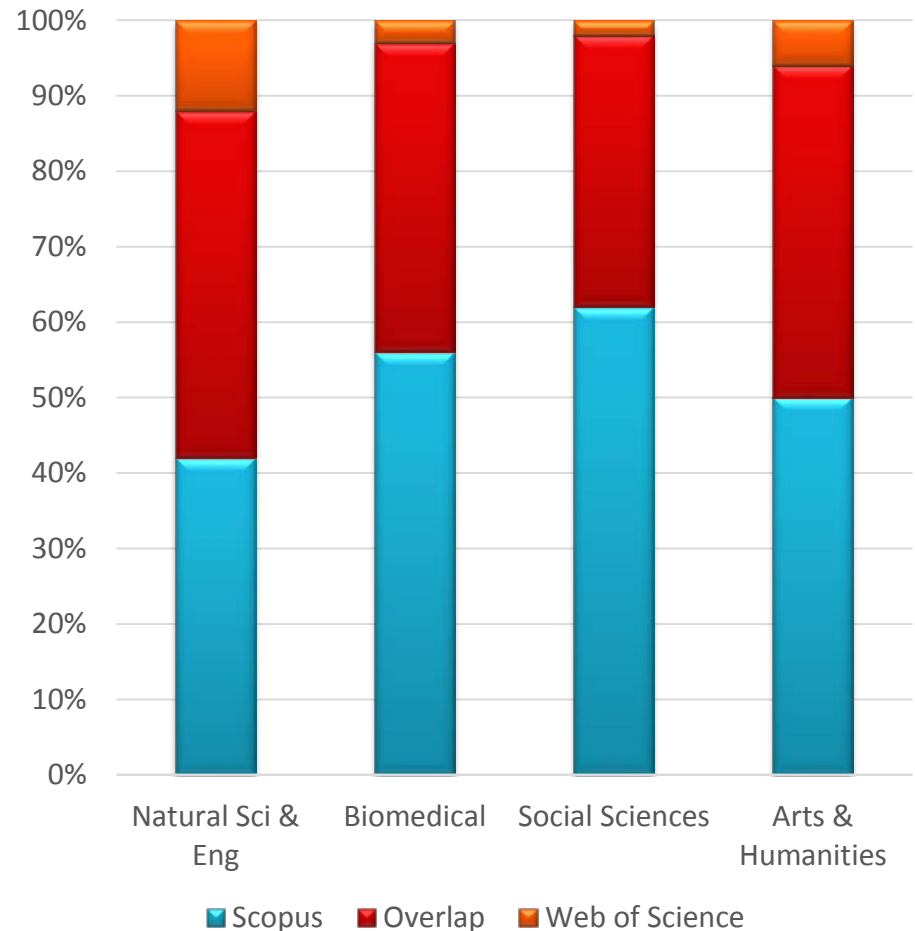
**Figure 2.**  
Overlap of active titles (source type "journal" only) between the citation databases and the medical databases

Source: Gavel, Y. and Lars Iselid. "Web of Science and Scopus: A journal title overlap study." *Online Information Review*, 2007, 32 (1), 8-21

# Citation tracking databases

- Web of Science
- Scopus

**% of academic journal titles  
listed in Ulrich's Periodicals**



Mongeon P, Paul-Hus A. The journal coverage of Web of Science and Scopus: a comparative analysis. *Scientometrics*. 2016; 106(1):213-228.



# Can I **just** use Google Scholar?!

## Pros

- Useful for finding grey literature resources.
- Useful for finding literature not well-indexed or covered in database sources.

## Cons

- Lack of transparency: search algorithms are unknown.
- **Problems with replication**: Systematic review search strategies should reproduce the same results, and that may be problematic when using Google Scholar since their search algorithms may change with no notice.

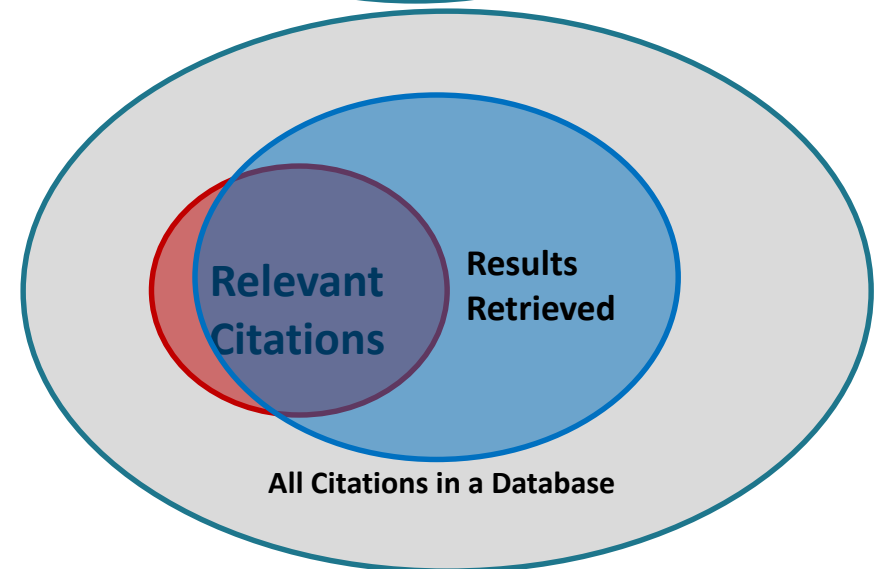
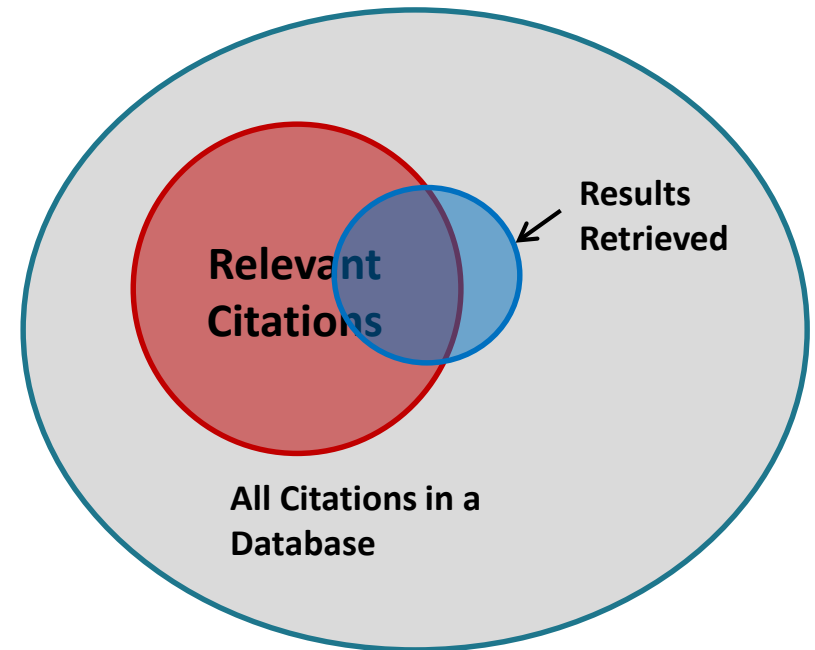
You might want to brush up on your Google Scholar search skills.

MIT has a handy list of search tips: <http://bit.ly/1NC2IbM>



## Sensitivity vs Precision

- Searches should seek **high sensitivity**, which may result in relatively low precision. (Cochrane Handbook)
- **Recall (Sensitivity)**: # of relevant reports divided by the total number of relevant reports in existence. (*typically cannot be measured*)
- **Precision**: # of relevant reports divided by the total number of reports identified. (*can be measured*)





- Any filters/limits applied to a search should be noted in the SR methodology
- Filters/Limits should always be added at the end of the search strategy.



- Some database-supplied limits are generally okay to use like language limits and date limits.
- However, database-supplied limits can often be inadequate for systematic reviews.

Use database supplied:

- Language
- Dates

Use validated filter:

- Humans
- Female/Male
- Age groups
- Publication/study types (randomized controlled trials, etc.)

**PubMed Search:**

“diabetes mellitus, type 2” = 104,615 results

With PubMed’s Male limit = 61,833 results

With user-created Male filter: (“Male”[Mesh] OR male or males OR men OR man) = 62,370 results

- Cochrane Handbook  
Randomized Controlled  
Trial filters (section 6.4.11)
- PubMed Subject Filters
- ISSG Search Filters  
Resources
- McMaster University  
Hedges Project
- BMJ Clinical Evidence

## ISSG Search Filters Resource

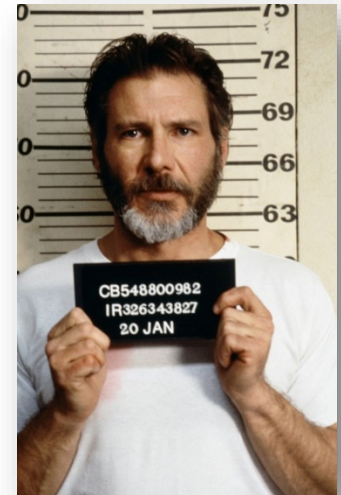
- Adverse effects
- Epidemiological studies
- Health services research
- Health state utility values
- Mixed methods studies
- Non-randomized studies
- Public Views & Patient Issues
- Qualitative research
- Quality of life
- Other filters

***And much more***

# What is grey lit?

‘that which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers, i.e., where publishing is not the primary activity of the producing body’<sup>1</sup>

Also known as **fugitive literature**



Term <sup>2</sup>	Defining aspect	Examples
Grey literature	Not controlled by commercial publishing organisations	Internal reports, Working papers, Newsletters
Grey data	User-generated, web-based	Tweets, Blogs, Facebook status updates
Grey information	Informally published or not published at all	Meeting notes, Emails, Personal memories

<sup>1</sup>Farace DJ, Frantzen J, editors. Sixth international conference on grey literature: work on grey in progress. grey literature 2004 conference proceedings; Dec. 6–7, 2004. Amsterdam: TextRelease; 2005.

<sup>2</sup>Adams, J., Hillier-Brown, F. C., Moore, H. J., Lake, A. A., Araujo-Soares, V., White, M., & Summerbell, C. (2016). Searching and synthesising ‘grey literature’ and ‘grey information’ in public health: Critical reflections on three case studies. Systematic Reviews, 5 doi:10.1186/s13643-016-0337-y



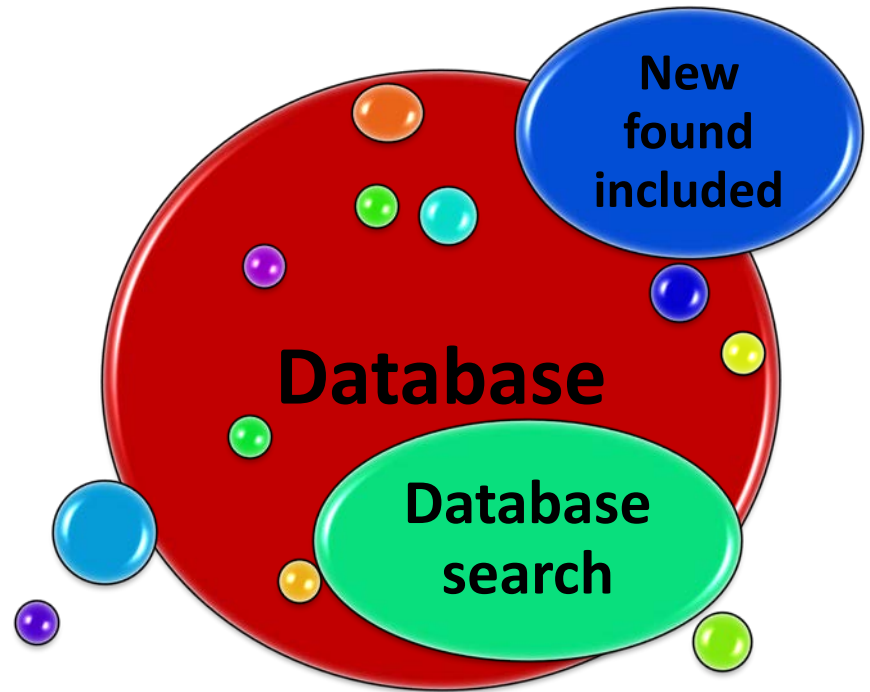
## Grey Literature: Why should we look for it?

- “On average published trials showed a 9% greater treatment effect than grey trials...Therefore excluding grey trials from a systematic review and or meta-analysis may artificially inflate its results and conclusions.”

[Hopewell S, McDonald S, Clarke MJ, Egger M. “Grey literature in meta-analyses of randomized trials of health care interventions.” Cochrane Database of Systematic Reviews 2007, Issue 2]

# Modifying the search

- Screen what was found
- If new studies are found which are in previously searched databases, then you can determine why it was missed
- Need to update searches

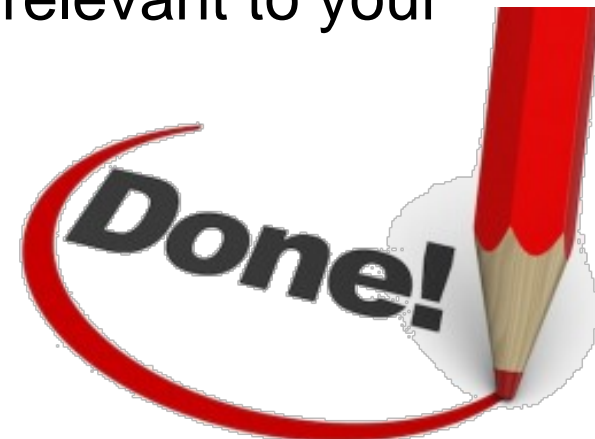


# When to stop searching...

## ***Have you..***

- ..identified and searched all of the reference databases that are likely to contain significant numbers of relevant citations?
- ..verified that there are no systematic biases of omission- such as non-English language sources or grey literature?
- ..conducted author searches on 3-4 of the most prolific authors on your topic?
- ..modified your search strategy by adjusting search terms as you identified and examined citations highly relevant to your topic?

Reference: Cooper HM, Hedges LV, Valentine JC. *The handbook of research synthesis and meta-analysis*. 2nd ed. New York: Russell Sage Foundation 2009.





## Conclusion

---

- Resource selection is an integral step in the SR method design
- All database selections and search design decisions should be reported in the SR report.
- Discuss decisions with your SR research team.



## Librarian Systematic Review Work Form

**Patron Name:**

**Patron PICO Statement:**

**Inclusion and Exclusion Criteria that can be controlled for with search:**

**Search Plan:**

**Benchmark:** *ex: PMID#[uid] OR PMID#[uid] OR PMID#[uid] OR PMID#[uid]*

**Notes regarding PICO vs Benchmark Articles:**

**Concept Hedges for Each Database** (Databases listed are just for examples. The databases you actually use may be different depending on topic.)

**Concept Hedge 1**

PubMed/Ovid Medline

Embase

AND

**Concept Hedge 2**

PubMed/Ovid Medline

Embase

AND

**Concept Hedge 3**

PubMed/Ovid Medline

Embase

**Copy and Paste Search Strategies (Combined Concept Hedges)**

With the exception of clinicaltrials.gov, these should work so that if you copy the entire search and paste it into the database, it will run and retrieve the number of results listed.

PubMed/Ovid Medline

Date Searched:

Applied Database Supplied Limits:

Number of Results:

Full Search Strategy:

Embase

Date Searched:

Applied Database Supplied Limits:

Number of Results:

Full Search Strategy:

ClinicalTrials.gov

Date Searched:

Number of Results:

Report your Clinicaltrials.gov search strategy as accurately as possible. Searches in Clinicaltrials.gov must be much simpler than those used for other databases.



# Term Harvesting

Presented by  
Susan Fowler, Director Brown School Library, MLIS

Original presentation designed by Michelle Doering, MLS  
Designing Search Strategies for Systematic Reviews, Spring 2017

---



### Learning Objectives

- Locate resources for text words and controlled vocabulary
- Record notations for selection or rejection of terms
- Organize terms in a manageable way
- Determine when to consult with research team about terms

## Lesson 05

## Term Harvesting



“Cucurbita”[Mesh]

Gourd  
Squash plants  
Squashes  
Squashe  
Pumpkin





## 1. PICO into Concept Hedges

---

Look over Search Plan and determine which concepts will become concept hedges

- “Concept Hedge” is also known as facet, concept, filter, hedge. It’s a group of terms that we search and save for use in future SRs
- For this example: Screening instruments to predict adverse outcomes for older emergency department patients

PICO:

Emergency department AND  
older adults AND  
screening instruments



## 2. Understand the term

---

### Understand the term

- MeSH definition from NLM
- Emtree from Embase
- Medical dictionary
- Reliable website such as Medline Plus
- UpToDate / point-of-care tools
- Benchmark articles
- Meet with researcher(s)
- Natural language from researcher
- wikipedia



Finding text words and controlled vocabulary, use both of these approaches

1. Objective approach – harvesting from control articles
2. Conceptual approach – database thesaurus and other resources





## 4. Harvesting from control articles

Harvesting from benchmark articles

Example: “emergency” AND “screening tools” AND “elderly”

Top of the record

### Prehospital recognition of severe sepsis: Development and validation of a novel **EMS** screening tool (Article)

[Polito, C.C.<sup>a</sup>](#), [Isakov, A.<sup>b</sup>](#), [Yancey, A.H., II<sup>b</sup>](#), [Wilson, D.K.<sup>c</sup>](#), [Anderson, B.A.<sup>d</sup>](#), [Bloom, I.<sup>b</sup>](#), [Martin, G.S.<sup>a</sup>](#), [Sevransky, J.E.<sup>a</sup>](#)

<sup>a</sup> Division of Pulmonary, Allergy, and Critical Care Medicine, Emory University, School of Medicine, 615 Michael St, Atlanta, GA, United States

<sup>b</sup> Department of Emergency Medicine, Emory University, Atlanta, GA, United States

<sup>c</sup> Department of Emergency Medicine, Northwestern University, Chicago, IL, United States

#### Abstract

Objective To derive and validate a predictive model and novel **emergency medical services** (EMS) screening tool for severe sepsis (SS). Design Retrospective cohort study. Setting A single EMS system and an urban, public hospital. Patients Sequential adult, nontrauma, nonarrest, at-risk, EMS-transported patients between January 1, 2011, and December 31, 2012 were included in the study. At-risk patients were defined as having all 3 of the following criteria present in the EMS setting: (1) heart rate greater than 90 beats/min, (2) respiratory rate

## 4. Harvesting from benchmark articles

### Harvesting from benchmark articles

“emergency” *continued...*

Bottom of the record

than 20 beats/min, and (3) systolic blood pressure less than 110 mm Hg. Results Six EMS characteristics were found to be predictors of SS: older age, transport from nursing home, **Emergency Medical Dispatch (EMD)** 9-1-1 chief concern category of "sick person," hot tactile temperature assessment, low systolic blood pressure, and low oxygen saturation. Conclusions The PRESS score is a novel EMS screening tool for SS that demonstrates a sensitivity of 86% and a specificity of 47%. Additional validation is needed.

---

#### Indexed keywords

**EMTREE medical terms:** adult; Article; core temperature; electronic medical record; **emergency health service**; evidence based practice; female; health insurance; heart arrest; human; major clinical study; male; middle aged; mortality; nursing home; priority journal; public hospital; sepsis; systolic blood pressure; thorax pain; age; home for the aged; procedures; retrospective study; risk factor; sepsis; statistical model; validation study; vital sign

**MeSH:** Age Factors; **Emergency Medical Services**; Female; Homes for the Aged; Humans; Logistic Models; Male; Middle Aged; Nursing Homes; Retrospective Studies; Risk Factors; Sepsis; Vital Signs

*Medline is the source for the MeSH terms of this document.*

---

**ISSN:** 07356757

**CODEN:** AJEME

**Source Type:** Journal

**Original language:** English

**DOI:** 10.1016/j.ajem.2015.04.024

**PubMed ID:** [26070235](#)

**Document Type:** Article

**Publisher:** W.B. Saunders

## 5. Harvesting from MeSH Database

### MeSH Database

- MeSH – Medical Subject Heading
- Entry Terms
- Items under MeSH in tree

The screenshot displays the MeSH (Medical Subject Headings) database interface. The search bar at the top shows the query "emergency service, medical". The main content area is titled "Emergency Medical Services" and includes a description: "Services specifically designed, staffed, and equipped for the emergency care of patients. Year introduced: 1980". Below this, there are options for "PubMed search builder options" and "Subheadings". The subheadings are organized into three columns: adverse effects, classification, economics, education, ethics, legislation and jurisprudence, manpower, methods, microbiology, standards, statistics and numerical data, supply and distribution, and therapeutic use. There are also checkboxes for "Distinct to MeSH Major Topic" and "Do not include MeSH terms found below this term in the MeSH hierarchy". The "Tree Number(s)" is N02.421.297, and the "MeSH Unique ID" is D004632. The "Entry Terms" section lists various related terms, including "Emergency Services, Medical", "Emergency Service, Medical", "Medical Emergency Service", "Medical Emergency Services", "Service, Medical Emergency", "Health Service, Emergency", "Health Services, Emergency", "Service, Emergency Health", and "Services, Emergency Health". The "Previous Indexing" section lists "Emergencies (1966-1967)" and "First Aid (1966-1967)". The "See Also" section lists "Ambulances" and "First Aid". The "All MeSH Categories" section shows a hierarchical tree structure: Health Care Category > Health Care Facilities, Manpower, and Services > Health Services > Emergency Medical Services. The "Emergency Medical Services" term is highlighted in the tree, and its associated terms are listed below it: Advanced Trauma Life Support Care, Emergency Medical Dispatch, Emergency Medical Service Communication Systems, Emergency Police Dispatcher, Emergency Service, Hospital, Trauma Centers, Emergency Services, Psychiatric, Poison Control Centers, Transportation of Patients, Ambulance Diversion, Ambulances, and Stretchers.

MeSH

emergency service, medical

Search

Create alert Limits Advanced Help

Full

Send to

**Emergency Medical Services**

Services specifically designed, staffed, and equipped for the emergency care of patients.  
Year introduced: 1980

PubMed search builder options

Subheadings:

- ☐ adverse effects
- ☐ classification
- ☐ economics
- ☐ education
- ☐ ethics
- ☐ legislation and jurisprudence
- ☐ manpower
- ☐ methods
- ☐ microbiology
- ☐ standards
- ☐ statistics and numerical data
- ☐ supply and distribution
- ☐ therapeutic use

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

Tree Number(s): N02.421.297  
MeSH Unique ID: D004632

Entry Terms:

- Emergency Services, Medical
- Emergency Service, Medical
- Medical Emergency Service
- Medical Emergency Services
- Service, Medical Emergency
- Health Service, Emergency
- Health Services, Emergency
- Service, Emergency Health
- Services, Emergency Health

Previous Indexing:

- [Emergencies \(1966-1967\)](#)
- [First Aid \(1966-1967\)](#)

See Also:

- [Ambulances](#)
- [First Aid](#)

All MeSH Categories

Health Care Category

Health Care Facilities, Manpower, and Services

Health Services

**Emergency Medical Services**

- [Advanced Trauma Life Support Care](#)
- [Emergency Medical Dispatch](#)
- [Emergency Medical Service Communication Systems](#)
- [Emergency Police Dispatcher](#)
- [Emergency Service, Hospital](#)
- [Trauma Centers](#)
- [Emergency Services, Psychiatric](#)
- [Poison Control Centers](#)
- [Transportation of Patients](#)
- [Ambulance Diversion](#)
- [Ambulances](#) +
- [Stretchers](#)

PubMed Search Builder

"Emergency Medical Services"[Mesh]

Add to search builder AND

Search PubMed

YouTube Tutorial

Related information

PubMed

Recent Activity

Turn Off Clear

emergency service, medical (1)

Emergency Medical Services

Risk Assessment

risk assessment (1)

See more...

## 5. Harvesting from MeSH Database

### MeSH Database

- Definition
- Date added
- Previous Index Terms
- Always add MeSH as keyword too

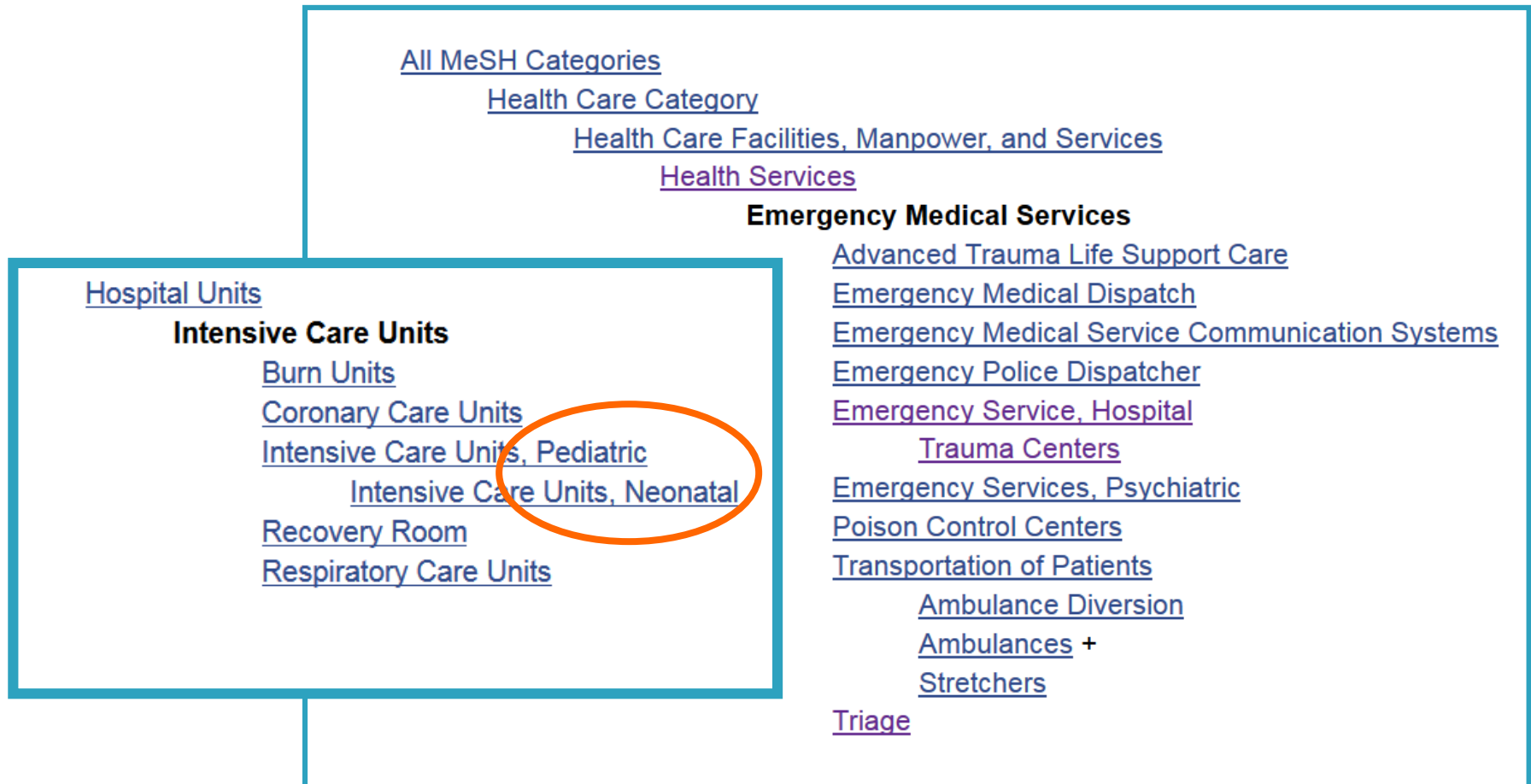
The screenshot displays the MeSH (Medical Subject Headings) database interface. The search bar at the top contains the query "emergency service, medical". The main content area shows the entry for "Emergency Medical Services", which includes a definition: "Services specifically designed, staffed, and equipped for the emergency care of patients." and the year introduced: 1980. Below this, there are sections for "PubMed search builder options" and "Subheadings", which are organized into a grid of checkboxes for various subtopics such as adverse effects, classification, economics, education, ethics, legislation and jurisprudence, manpower, methods, microbiology, standards, statistics and numerical data, supply and distribution, and therapeutic use. Further down, there are options to restrict to MeSH Major Topic and to exclude MeSH terms found below this term in the MeSH hierarchy. The "Tree Number(s)" is N02.421.297, and the "MeSH Unique ID" is D004632. The "Entry Terms" section lists various related terms, including "Emergency Services, Medical", "Emergency Service, Medical", "Medical Emergency Service", "Medical Emergency Services", "Service, Medical Emergency", "Health Service, Emergency", "Health Services, Emergency", "Service, Emergency Health", and "Services, Emergency Health". The "Previous Indexing" section lists "Emergencies (1966-1967)" and "First Aid (1966-1967)". The "See Also" section lists "Ambulances" and "First Aid". On the right side of the interface, there is a "PubMed Search Builder" section showing the query "Emergency Medical Services"[Mesh] and a "Recent Activity" section showing the search history.

“Emergency Medical Services”[Mesh] OR  
“Emergency Medical Services”

## 5. Harvesting from MeSH Database

### MeSH Database

- Tree
- Explosion / No Explosion



## 5. Harvesting from MeSH Database

### MeSH Database

- Rarely use attached subheadings

NCBI Resources ▾ How To ▾

PubMed.gov  
US National Library of Medicine  
National Institutes of Health

PubMed 26070235[uid]  
Create RSS Create alert Advanced

Format: Abstract ▾ Send to ▾

*Am J Emerg Med.* 2015 Sep;33(9):1119-25. doi: 10.1016/j.ajem.2015.04.024. Epub 2015 Apr 22.

**Prehospital recognition of severe sepsis: development and validation of a novel EMS screening tool.**

Polito CC<sup>1</sup>, Isakov A<sup>2</sup>, Yancey AH 2nd<sup>2</sup>, Wilson DK<sup>3</sup>, Anderson BA<sup>4</sup>, Bloom I<sup>2</sup>, Martin CS<sup>5</sup>, Savransky JE<sup>5</sup>

**Author information**

**Abstract**

**OBJECTIVE:** To derive and validate a predictive model and novel emergency (EMS) screening tool for severe sepsis (SS).

**DESIGN:** Retrospective cohort study.

**SETTING:** A single EMS system and an urban, public hospital.

**PATIENTS:** Sequential adult, nontrauma, nonarrest, at-risk, EMS-transported January 1, 2011, and December 31, 2012 were included in the study. At-risk as having all 3 of the following criteria present in the EMS setting: (1) heart rate greater than 100 beats/min (2) respiratory rate greater than 20 beats/min and (3) systolic blood pressure less than 90 mmHg.

#### Publication Types, MeSH Terms, Grant Support

##### Publication Types

[Research Support, N.I.H., Extramural](#)  
[Validation Studies](#)

##### MeSH Terms

[Age Factors](#)  
[Emergency Medical Services/methods\\*](#)  
[Female](#)  
[Homes for the Aged](#)  
[Humans](#)  
[Logistic Models](#)  
[Male](#)  
[Middle Aged](#)  
[Nursing Homes](#)



## 5. Harvesting from MeSH Database

### MeSH Database

- Floating subheading

The screenshot shows the MeSH database search results for the term "surgery". The interface includes a search bar at the top with "MeSH" selected and "surgery" entered. Below the search bar, there are links for "Create alert", "Limits", and "Advanced". The search results are displayed in a list format, with "Summary" and "20 per page" selected. The results are numbered 1 to 20 of 75. The first three results are:

- General Surgery**  
1. A specialty in which manual or operative procedures are used in the treatment of disease, injuries, or deformities.  
Year introduced: 2009 (1974)
- Surgical Procedures, Operative**  
2. Operations carried out for the correction of deformities and defects, repair of injuries, and diagnosis and cure of certain diseases. (Taber, 18th ed.)  
Year introduced: 1998(1963)
- surgery [Subheading]**  
3. Used for operative procedures on organs, regions, or tissues in the treatment of diseases, including tissue section by lasers. It excludes transplantation, for which "transplantation" is used.  
Year introduced: 1966

On the right side of the search results, there is a sidebar with a search bar and a list of related terms. The term "surgery" is highlighted in the list, and the text "surgery" [Subheading] is written next to it. The "Add to search" button is circled in red.



## 7. Harvesting from other resources

---

### Other resources

- Natural language from researcher
- UpToDate
- Other articles you found in the search
- Natural language from an internet search  
(using reliable resources)
  - Medline Plus
  - Medline Health
  - Mayo Clinic

Other resources?





When gathering terms, it's better to err on the side of high recall (sensitivity)

- Using controlled vocabulary with keywords increases recall and precision
- Re-using concept hedges – It might not pick up articles when combined with the other concept hedges in your search, but could for future questions
- What if you don't recall that *one* very important clinical trial?

Example from MeSH tree

**Emergency Medical Services**

Advanced Trauma Life Support Care

Emergency Medical Service Communication Systems

Emergency Service, Hospital

Trauma Centers

Emergency Services, Psychiatric

Poison Control Centers

Transportation of Patients

Ambulances+

Triage

Adding the keyword “Triage” picked up many more irrelevant results, but picked up two studies that were included in the SR for EMS.



“hospital emergency service”

### **Prediction of functional decline in older hospitalized patients: a comparative multicenter study of three screening tools.**

#### **Abstract**

Older hospitalized patients are at risk of functional decline, which is associated with several negative outcomes. The aim of this study was to compare the predictive accuracy of the Identification of Seniors At Risk (ISAR), Variable Indicative for Placement risk (VIP) and the Flemish version of the Triage Risk Screening Tool (TRST) in predicting functional decline.

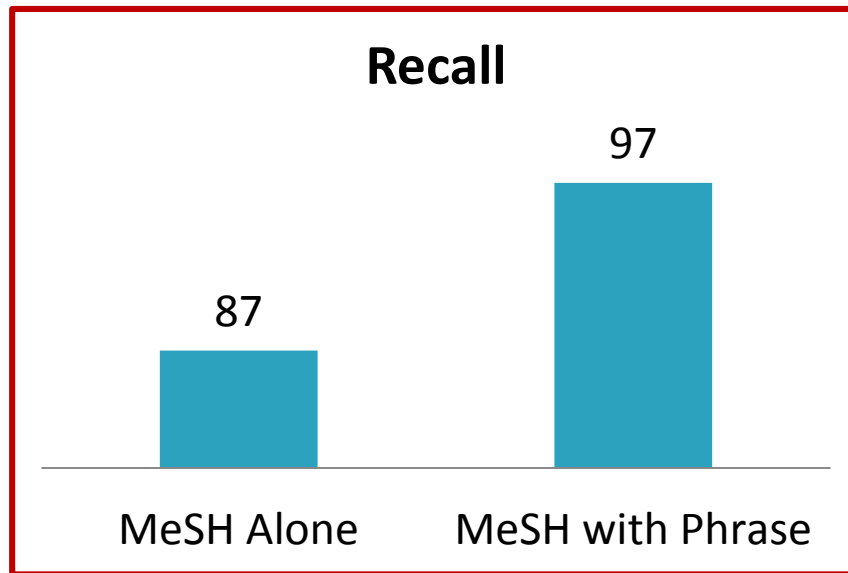
#### MeSH Terms

Activities of Daily Living  
Aged  
Aged, 80 and over  
Belgium  
Female  
Follow-Up Studies  
Geriatric Assessment\*  
Hospitalization\*  
Humans  
Male  
Predictive Value of Tests\*  
Prospective Studies  
Risk Assessment  
Surveys and Questionnaires



## Erring on the side of recall cont.

Recall (Sensitivity): Retrieved relevant documents out of all relevant documents available.

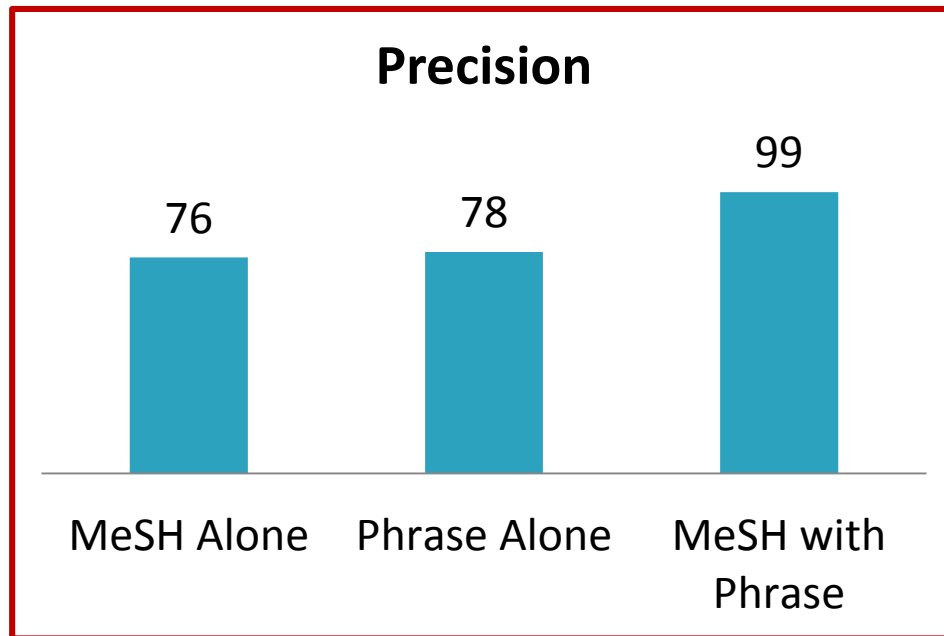


**MeSH alone: 87% Recall**  
“breast neoplasms”[Mesh]

**Phrase with MeSH: 97% Recall**  
“breast neoplasms”[Mesh] OR  
“breast cancer” OR “human  
mammary carcinoma”... etc.

Full MLA Conference presentation:  
[http://digitalcommons.wustl.edu/becker\\_pubs/56/](http://digitalcommons.wustl.edu/becker_pubs/56/)

Precision: Retrieved *relevant*\* documents out of all retrieved documents.



**MeSH alone: 76% Precision**  
“breast neoplasms”[Mesh]

**Phrase alone: 78% Precision**  
“breast cancer” OR “human mammary carcinoma”... etc.

**Phrase with MeSH: 99% Precision**  
“breast neoplasms”[Mesh] OR  
“breast cancer” OR “human mammary carcinoma”... etc.

Full MLA Conference presentation:  
[http://digitalcommons.wustl.edu/becker\\_pubs/56/](http://digitalcommons.wustl.edu/becker_pubs/56/)

\*Relevant in this case means the presence of terminology, not necessarily whether the article is *ABOUT* breast cancer.

Questions?



# DESIGNING AND EVALUATING SEARCHES

- Boolean (AND, OR, NOT)
- Phrase searching & Proximity
- Truncation & Wildcards



- OR
- AND
- **NOT**: always check to see if relevant articles would be excluded

((("Nutrition Therapy"[Mesh] OR "Nutritionists"[Mesh])) OR ("Referral and Consultation"[MeSH] AND (malnutrition or nutrition\* or dietit\*)) OR ((malnutrition or nutrition\* or diet\*) AND (therapy or intervention or consult\* or diagnosis\* or referral)) AND English[lang])) AND (((((((malnutrition or nutrition\*)) AND (screening or assess\* or status or evaluation))) OR ("Nutritional Status"[Mesh]) OR "Nutrition Assessment"[Mesh] OR "Nutrition Surveys"[Mesh]) AND English[lang])) AND (("Hospitalization"[MeSH Terms]) OR (hospitalization[Title/Abstract] OR ("hospital patient"[Title/Abstract] OR "hospital patients"[Title/Abstract]))

NOT (((("Child"[MeSH] OR "Adolescent"[MeSH] OR "Pediatrics"[MeSH] OR child[Title/Abstract] OR children[Title/Abstract] OR adolescent[Title/Abstract] OR adolescents[Title/Abstract] OR pediatric[Title/Abstract] OR paediatric[Title/Abstract] OR paediatrics[Title/Abstract] OR pediatrics[Title/Abstract] OR infant[Title/Abstract] OR infant[Title/Abstract]))))



- Phrase searching: words must be next to each other and in certain order
  - “privacy by design”
- Proximity
  - In any order: addict\* adj2 computer\*
  - In exact order: black adj1 lung
- Why use?
  - More efficient
  - Captures wide variety of options



Example:

(nutrition\* or diet\*) adj4 (assess\* or evaluat\* or consult\* or screen\* or survey\*)

Finds any instances of the word nutrition or diet within four words of the assessment synonyms  
dietitian consult or consult with dietitian or  
nutritional assessment or nutritional survey



- Each database uses different symbols
- **Truncation:** Captures plurals and spelling variants at the end of a root word
- **Wildcard:** variants within words
- Examples
  - P?ediatric\*: pediatrics or paediatrics or pediatrician



Cat\*:

Cats

Catastrophes

Catastrophic

Catabolite

Categorize

Catechesis

catchpenny



- Use appropriate field Tags depending on search terms and/or databases used
- Examples:
  - “Chin” (both a body part and a common name)
  - “Email” (can pick up contact information in author field)



- Keep strategy close to the same
- Controlled vocabulary terms will change (if available)
- Use the same list of keywords for each database
- Syntax will change
  - Field tags
  - Wildcard/truncation symbols
  - Proximity symbols and options

- Double check for potential translation issues that may arise when executing the combined hedge search in multiple databases:
  - How databases handle parentheses (especially parentheses for the first hedge)



## PubMed/MeSH

### Adipose Tissue, Brown

A thermogenic form of adipose tissue composed of BROWN, hibernating mammals. Brown fat is richly vascularized, innervates the stored lipids.

Year introduced: 2007 (1968)

PubMed search builder options

[Subheadings:](#)



## Embase/Emtree

### Browse Emtree

#### Query Builder ▲

Build a multi-term search query

'brown adipose tissue'/exp

## CINAHL Headings

Results For: brown fat

☐ Check box to view subheadings. | Click linked term for tree view.

- ☐ [Diet, Fat-Restricted](#)
- ☐ [Brown-Sequard Syndrome](#)
- ☐ [Fat Substitutes](#)
- ☐ [Dietary Fats](#)
- ☐ [Fats, Unsaturated](#)
- ☐ [Adipocytes](#)
- ☐ [Plummer-Vinson Syndrome](#)
- ☐ brown fat (Search as Keyword) ?







Ovid-Medline	Embase	CINAHL	Scopus
<b>exp Breast Neoplasms/</b> OR (breast <b>adj4</b> (cancer* OR neoplasm* OR carcinoma* <b>)).mp.</b>	<b>'breast cancer'/exp</b> OR (breast <b>NEAR/4</b> (cancer* OR neoplasm* OR carcinoma*))	<b>(MH "Breast Neoplasms")</b> OR (breast <b>N/4</b> (cancer* OR neoplasm* OR carcinoma*))	<b>TITLE-ABS-KEY</b> (breast) <b>W/4</b> (cancer* OR neoplasm* OR carcinoma*)

Important in this phase:

- Filters / limits to be added
- Notes for methods section
- Reporting your full search strategy

Tips

- Do not use database limits
- Apply limits at end to be able to check the limit
- Explain and document all limits

**NOT (("Animals"[Mesh]) NOT ("Animals"[Mesh] AND  
"Humans"[Mesh]))**

*“used to exclude animal studies that do not involve humans and animals, rather than limiting to the desired “humans” – a simpler construction but one that would exclude studies not tagged as either but that included relevant human evidence” (Sampson et al, p.25)*

Sampson M, McGowan J, Lefebvre C, Moher D, Grimshaw J. PRESS: Peer Review of Electronic Search Strategies. Ottawa: Canadian Agency for Drugs and Technologies in Health; 2008.

# Study Type

- Increase Precision, maintain recall
  - Use NOT to exclude unwanted publication type
  - Use sensitive filter for wanted publication types (RCT)

Tenopir, C., & Shu, M. E. (1989). Magazines in full text: Uses and search strategies. *Online Review*, 13(2), 107-118.

# Study Type

("Controlled Clinical Trial"[Publication Type] OR "Randomized Controlled Trial"[Publication Type] OR "Clinical Trial"[Publication Type] OR "Prospective Studies"[Mesh] OR "Retrospective Studies"[Mesh] OR "Comparative Study"[Publication Type] OR Evaluation Studies[Publication Type] OR "Validation Studies"[Publication Type] OR Groups[tiab] OR trial[tiab] OR randomly[tiab] OR randomized[tiab] OR randomised[tiab] OR randomization[tiab] OR randomisation[tiab] OR randomly[tiab] OR "Clinical Trial" OR "Controlled Trial" OR "Multicenter Study" OR "Prospective Studies" OR "Prospective Study" OR "prospective method" OR "Retrospective Studies" OR "Retrospective Study" OR "ex post facto design" OR "retrospective design" OR "before-and-after" OR "before and after" OR "Comparative Study" OR "Comparative Studies" OR "intermethod comparison" OR "method comparison" OR "methods comparison" OR "Evaluation Studies" OR "Evaluation Study" OR "evaluation research" OR "Validation Studies" OR "Validation Study" OR "instrument validation") NOT (Editorial[ptyp] OR Letter[ptyp] OR Case Reports[ptyp] OR Comment[ptyp] OR systematic[sb])

Filter created by Susan Fowler.

- **Database:** Pubmed
- **Database supplied limits:** 1997-2017
- **Date search was run:** 3/6/2017
- **Number of records retrieved:** 3845
- **Full strategy:**

((("Nutrition Therapy"[Mesh] OR "Nutritionists"[Mesh])) OR ("Referral and Consultation"[MeSH] AND (malnutrition or nutrition\* or dietit\*)) OR ((malnutrition or nutrition\* or diet\*) AND (therapy or intervention or consult\* or diagnosis\* or referral)) AND English[lang])) AND (((((((malnutrition or nutrition\*)) AND (screening or assess\* or status or evaluation))) OR ("Nutritional Status"[Mesh] OR "Nutrition Assessment"[Mesh] OR "Nutrition Surveys"[Mesh]) AND English[lang])) AND ("Hospitalization"[MeSH Terms] OR (hospitalization[Title/Abstract] OR ("hospital patient"[Title/Abstract] OR "hospital patients"[Title/Abstract])) NOT (animals [mh] NOT humans [mh]))

1. exp infant/
2. (infant, newborn or neonate or neonatal or premature or very low birth weight or low birth weight or VLBW or LBW or Newborn or infan\* or neonat\*).ti,ab.
3. exp weaning/ or exp infant feeding/ or exp baby food/ or exp infant nutrition/
4. (((complementary or supplementary or wean\* or semisolid or infant\* or baby) adj1 (food\* or feed\*)) or beikost or (introduc\* adj1 food\*)).ti,ab.
5. (1 or 2) and (3 or 4)
6. ((Dietary adj2 (carbohydrate\* or fiber\* or sucrose\* or sugar\*)) or ((fruit\* or vegetable\*) adj1 juice\*) or (added adj1 sugar\*) or Nutritive Sweetener\* or sweets).ti,ab.
7. exp carbohydrate diet/ or exp dietary fiber/ or exp fruit juice/ or exp Sucrose/ or exp vegetable juice/ or exp sugar intake/
8. (((saturated or unsaturated or trans or dietary) adj1 fat\*) or hydrogenated oils\* or omega 3 or dha or ((docosahexaenoic or eicosapentaenoic) adj1 acid)).ti,ab.
9. exp unsaturated fatty acid/ or exp fatty acid/ or exp icosapentaenoic acid/ or docosahexaenoic acid/ or exp trans fatty acid/
10. ((diet or dietary or nutrition\* or milk\* or vegetable\* or animal\*) adj2 protein\*).ti,ab.
11. exp protein intake/ or exp meat/
12. ((food adj1 (color\* or colour\* or additive\*)) or antinutritent\* or anti nutrient\* or preservative\* or nonnutritive sweetener\* or non nutritive sweetener\* or amylase\* or lipase\* or butylated hydroxyanisole or Phytic Acid or Oxalic Acid or Oxalates or Glucosinolates or Flavonoids\* or Trypsin Inhibitors or Lectins or Tannins).ti,ab.
13. food additives/ or exp food coloring agents/ or exp food preservatives/ or exp Amylases/ or exp Lipase/ or exp Flavonoids/ or exp Butylated Hydroxyanisole/ or exp sweetening agent/
14. food additives/ or exp food coloring agents/ or exp food preservatives/ or exp Amylases/ or exp Lipase/ or exp Flavonoids/ or exp Butylated Hydroxyanisole/ or exp sweetening agent/ or exp Glucosinolates/ or exp Tannins/ or exp Lectins/ or exp Oxalates/ or exp Phytic Acid/
15. or/6-14
16. 5 and 15
17. animal/ not human/
18. 16 not 17

(((((infant, newborn[MeSH] OR newborn OR neonate OR neonatal OR premature OR low birth weight OR VLBW OR LBW or infan\* or neonat\*) NOT (animals [mh] NOT humans [mh]))) AND (((("infant nutritional physiological phenomena"[MeSH Terms] OR "complementary food" OR "complementary foods" OR "complementary feeding" OR "supplementary feeding" OR "weaning" OR "weaning foods" OR "beikost" OR "semisolids" OR "semisolid food" OR "semisolid foods" OR "semisolid feeds" OR "infant feeding" OR "infant diet" OR "infant food" OR "infant foods" OR "allergenic foods"[Title/Abstract] or "allergenic food"[Title/Abstract] or "introduction to solids" or "food"[MeSH Terms] OR (((food[Title/Abstract] OR foods[Title/Abstract])) AND introduc\*[Title/Abstract])))) AND (((("Dietary Proteins"[Mesh] OR "Meat"[Mesh]) OR ((diet[Title/Abstract] OR dietary[Title/Abstract] OR nutrition\*[Title/Abstract] OR milk\*[Title/Abstract] OR vegetable\*[Title/Abstract] OR animal\*[Title/Abstract])) AND (protein[Title/Abstract] OR proteins[Title/Abstract])) OR (((("Nutritive Sweeteners"[Title/Abstract] or "Nutritive Sweetener"[Title/Abstract] or "dietary carbohydrates"[Title/Abstract] or "dietary carbohydrate"[Title/Abstract] or "dietary fiber"[Title/Abstract] OR "dietary fibers"[Title/Abstract] OR "fruit juice" OR "fruit juices"[Title/Abstract] OR "vegetable juice"[Title/Abstract] OR "vegetable juices"[Title/Abstract] OR "dietary sucrose"[Title/Abstract] OR "dietary sucroses"[Title/Abstract] OR "dietary sugar"[Title/Abstract] OR "dietary sugars"[Title/Abstract] OR "sweets"[Title/Abstract] OR "added sugars"[Title/Abstract] OR "added sugar"[Title/Abstract])) OR (((dietary carbohydrates"[MeSH Terms] or "Dietary Fiber"[Mesh] OR "Fruit and Vegetable Juices"[Mesh] OR "Dietary Sucrose"[Mesh] OR "Nutritive Sweeteners"[Mesh])) OR (((("Fats, Unsaturated"[Mesh] OR "Dietary Fats, Unsaturated"[Mesh] OR "Fatty Acids"[Mesh] OR "Trans Fatty Acids"[Mesh] OR "Fatty Acids, Omega-3"[Mesh] OR "Eicosapentaenoic Acid"[Mesh] OR "Docosahexaenoic Acids"[Mesh] OR "dietary fats"[MeSH]) OR ("Saturated fat"[Title/Abstract] or "Saturated fats"[Title/Abstract] or "unsaturated fat"[Title/Abstract] or "unsaturated fats"[Title/Abstract] or "unsaturated fatty"[Title/Abstract] or "trans fat"[Title/Abstract] or "trans fats"[Title/Abstract] or "hydrogenated oils"[Title/Abstract] or "hydrogenated oil"[Title/Abstract] or "omega 3"[Title/Abstract] or "dha"[Title/Abstract] or "docosahexaenoic acid"[Title/Abstract] or "eicosapentaenoic acid"[Title/Abstract] or "dietary fats"[Title/Abstract] or "dietary fat"[Title/Abstract])) OR (((("Amylases"[Mesh] OR "Lipase"[Mesh] OR "Phytic Acid"[Mesh] OR "Oxalic Acid"[Mesh] OR "Oxalates"[Mesh] OR "Glucosinolates"[Mesh] OR "Flavonoids"[Mesh] OR "Trypsin Inhibitors"[Mesh] OR "Lectins"[Mesh] OR "Tannins"[Mesh]) OR "Butylated Hydroxyanisole"[Mesh] OR "Non-Nutritive Sweeteners"[Mesh]) OR "Sodium Benzoate"[Mesh]) OR ("Phytic Acid"[Title/Abstract] OR "Oxalic Acid"[Title/Abstract] OR "Oxalates"[Title/Abstract] OR "Glucosinolates"[Title/Abstract] OR "Flavonoids"[Title/Abstract] OR "Trypsin Inhibitors"[Title/Abstract] OR "Lectins"[Title/Abstract] OR "Tannins"[Title/Abstract] or amylase\*[Title/Abstract] or lipase\*[Title/Abstract] or "food color"[Title/Abstract] or "food colors"[Title/Abstract] or "food coloring"[Title/Abstract] or "food colorings"[Title/Abstract] or "food colour"[Title/Abstract] or "food colours"[Title/Abstract] or "food colouring"[Title/Abstract] or "food colourings"[Title/Abstract] or "food colorant"[Title/Abstract] or "food colourant"[Title/Abstract] or "food colorants"[Title/Abstract] or "food colourants"[Title/Abstract] or "food coloration"[Title/Abstract] or "food colorations"[Title/Abstract] or "food colouration"[Title/Abstract] or "food colourations"[Title/Abstract] OR "butylated hydroxyanisole"[Title/Abstract] OR "nonnutritive sweetener"[Title/Abstract] OR "nonnutritive sweeteners"[Title/Abstract] OR "non nutritive sweetener"[Title/Abstract] OR "non nutritive sweeteners"[Title/Abstract] or "antinutrient"[Title/Abstract] or "antinutrients"[Title/Abstract] or "anti nutrient"[Title/Abstract] or "anti nutrients"[Title/Abstract] or "preservatives"[Title/Abstract] or "food additive"[Title/Abstract] or "food additives"[Title/Abstract])))) AND English[lang]))



1. Run search
2. Check full strategy against control articles.

# Modifying the search

- Find articles which are indexed in the database
- Compare against the search
- Narrow down to which concept(s) or limit(s) are the issue

Line	Search	Results
1	A	5000
2	B	8000
3	C	12000
4	A and B and C	800
5	A and B and C limits	600
6	Article 1	1
7	Article 2	1
8	Article 3	1
9	Article 4	1
10	6 or 7 or 8 or 9 or 10	4
11	5 and 10	0
12	1 and 12	4
13	2 and 12	3
14	10 NOT 13	1
15	3 and 12	2
16	10 not 15	2
17	4 and 10	1

This article was not retrieved due to B

These articles were not retrieved due to C

This article was not retrieved due to limits

# Peer Review of Electronic Search Strategies (PRESS)

- PRESS: Peer Review of Electronic Search Strategies
- Developed by the Canadian Agency for Drugs and Technologies in Health
- Focuses only on search strategy
- First release 2008, updated in 2015

1. Translation of research question
2. Boolean & proximity operators
3. Subject headings
4. Text words
5. Spelling, syntax, and line numbers
6. Limits and filters
7. Overall assessment

# PRESS Exercise

Let's use the PRESS tool to evaluate the design of different systematic review literature search strategies

PRESS Evaluation

PRESS Evaluation				
	P=	AND (I=	OR C=	) AND O=
#	Elements	Evaluation/Notes		
1	<b>Translation:</b> Does the search strategy match the research question?  Are the concepts clear?  Are unconventional strategies explained?	needs work	adequate	well done
2	<b>Boolean and Proximity Operators:</b> Are Boolean and proximity operators used correctly?  Could precision be improved by using proximity operators or phrase-searching instead of AND?	needs work	adequate	well done
3	<b>Controlled Vocabulary:</b> Are any important subject headings missing?  Are any irrelevant ones included?	needs work	adequate	well done
4	<b>Natural Language:</b> Are any terms or spelling variants missing?  Have irrelevant terms been included?  Has truncation been used optimally?	needs work	adequate	well done
5	<b>Spelling, Syntax, and Line Numbers:</b> Does the search strategy have any spelling errors,	needs work	adequate	well done

# **PRESS Exercise**

**Individual 10 Minutes**

---

1. Read through PRESS Worksheet
2. Read through case example
3. Complete the PRESS Worksheet

**Group 5 Minutes**

---

**We will discuss your findings as a large group**

# PRESS Exercise

## Individual

---

1. Read through the abstract for PRESS exercise #2 and fill out the PRESS worksheet
2. Make sure to fill out the PICO information on the top of the worksheet!

**[Total: 10 minutes]**

## Group

---

**We will discuss your findings from PRESS Exercise #2 as a large group [~10 minutes]**

# Questions?

# PRESS Evaluation

<div style="display: flex; justify-content: space-around; padding: 5px;"> <span>P=</span> <span>AND (I=</span> <span>OR C=</span> <span>) AND O=</span> </div>				
#	Elements	Evaluation/Notes		
1	<b>Translation:</b> Does the search strategy match the research question?  Are the concepts clear?  Are unconventional strategies explained?	needs work	adequate	well done
2	<b>Boolean and Proximity Operators:</b> Are Boolean and proximity operators used correctly?  Could precision be improved by using proximity operators or phrase-searching instead of AND?	needs work	adequate	well done
3	<b>Controlled Vocabulary:</b> Are any important subject headings missing?  Are any irrelevant ones included?	needs work	adequate	well done
4	<b>Natural Language:</b> Are any terms or spelling variants missing?  Have irrelevant terms been included?  Has truncation been used optimally?	needs work	adequate	well done
5	<b>Spelling, Syntax, and Line Numbers:</b> Does the search strategy have any spelling errors, system syntax errors, or wrong line numbers?	needs work	adequate	well done
6	<b>Limits and Filters:</b> Do any limits or filters seem unwarranted?  Are sources cited for filters used?	needs work	adequate	well done

Adopted from: PRESS – Peer Review of Electronic Search Strategies: 2015 Guideline Explanation and Elaboration (PRESS E&E). Ottawa: CADTH; 2016 Jan. ([https://www.cadth.ca/sites/default/files/pdf/CP0015\\_PRESS\\_Update\\_Report\\_2016.pdf](https://www.cadth.ca/sites/default/files/pdf/CP0015_PRESS_Update_Report_2016.pdf))

And *PRESS Exercise* designed by Margaret Foster, Texas A&M University (<http://guides.library.tamu.edu/systematicreviews>)

By Susan A. Fowler, MLIS, Washington University in St. Louis (<https://becker.wustl.edu/services/systematic-reviews>)



# Are Metabolically Healthy Overweight and Obesity Benign Conditions?: A Systematic Review and Meta-analysis

## ABSTRACT

### Background:

Recent interest has focused on a unique subgroup of overweight and obese individuals who have normal metabolic features despite increased adiposity. Normal-weight individuals with adverse metabolic status have also been described. However, it remains unclear whether metabolic phenotype modifies the morbidity and mortality associated with higher body mass index (BMI).

### Data Sources:

Studies were identified from electronic databases.

## METHODS

This systematic review and meta-analysis is reported in accordance with the Meta-analysis of Observational Studies in Epidemiology guidelines (11) and is registered with the International Prospective Register of Systematic Reviews (CRD42013003607). The researchers are experienced in meta-analysis (12–18).

### Data Sources and Searches

We selected relevant studies published between 1950 and 5 June 2013. We searched Embase, PubMed, and abstracts from the 2011 and 2012 meetings of the Endocrine Society and the European Society of Endocrinology.

The following combined text and Medical Subject Heading (MeSH) terms were used: *body mass index, overweight, obesity and metabolic syndrome*. The complete PubMed search was as follows: (((“body mass index”[MeSH Terms] OR body mass index[Text Word]) OR (“overweight”[MeSH Terms] OR overweight[Text Word]) OR (“obesity”[MeSH Terms] OR obesity[Text Word])) AND (metabolic[All Fields] AND (“syndrome”[MeSH Terms] OR syndrome[Text Word])) AND (“mortality”[MeSH Terms] OR “survival rate” [Mesh Term] OR “cause of death” [Mesh Term]) OR ((“Obesity”[Mesh]) AND benign [text]) OR (metabolically benign)). All potentially eligible studies were considered for review, regardless of primary outcome or language. A manual search was also performed by using references of key articles published in English.

# Writing the Methods Section

Presented by  
Susan Fowler, Director Brown School Library, MLIS

Original presentation designed by Laura Simon, MLS  
Designing Search Strategies for Systematic Reviews, Spring 2017

---

## Learning Objectives

1. Summarize search design, databases, and grey literature resources consulted.
2. Compose methods section for case example.



The Methods section should precisely describe the search strategy/design used to gather information for the systematic review

**Ultimate purpose:**

**To ensure the search strategy is reproducible**

Information to be included based on IOM and PRISMA guidelines:

- Search elements
- Specify databases and which interfaces were used to access databases (e.g.: Ovid-Medline), including grey literature resources
- Dates searched
- Database-supplied limits (if applicable)
- Cite established filters used and note if any modifications were made to them (if applicable)
- Provide at least one fully replicable search strategy, it is better to provide them all
- Explain how citation duplicates were discovered and removed

- Standards for Systematic Reviews. Washington, US: National Academies Press. Retrieved from <http://www.nationalacademies.org>
- Checklist of items to include when reporting a systematic review or meta-analysis. The PRISMA Statement. <http://dx.doi.org/10.1371/journal.pmed.1000097>

# Hands On – 10 minutes

- Refer to the Methods Example in your hand outs
  - Use the Methods Checklist to appraise how well the Methods were written
-

Checklist for Writing a Systematic Review Methods Section				
<b>Resources Used</b>	Lists databases used?	Specifies Database platform?	≥ 3 databases used?	Databases used w/ platforms:
	<input type="checkbox"/> YES  <input type="checkbox"/> NO	<input type="checkbox"/> YES  <input type="checkbox"/> NO	<input type="checkbox"/> YES  <input type="checkbox"/> NO	
	Grey literature used?	Grey-Lit used:		
	<input type="checkbox"/> YES  <input type="checkbox"/> NO			

<b>Concepts</b>	PICO elements named?	<b>P</b>	
		<b>I</b>	
		<b>C</b>	
		<b>O</b>	
	<input type="checkbox"/> YES  <input type="checkbox"/> NO		

# The Methods Checklist

<b>Limits &amp; Filters</b>	Database supplied limits used?		<input type="checkbox"/> language <input type="checkbox"/> dates <input type="checkbox"/> other: _____
	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
<b>Articles</b>	Total number of unique articles named?		Total number = _____
	<input type="checkbox"/> YES <input type="checkbox"/> NO		



# The Methods Checklist

	Arranged or organized in a citation management system?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	<input type="checkbox"/> Endnote  <input type="checkbox"/> <u>Mendelay</u>  <input type="checkbox"/> Other: _____
<b>Reproducible</b>	At least 1 strategy fully reproducible included for appendix?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	Database strategy included: _____
<b>Date searched</b>	Database indexing dates included?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	
	Date searches were run included?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	Date: _____

Questions?

Checklist for Writing a Systematic Review Methods Section				
<b>Resources Used</b>	Lists databases used?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	Specifies Database platform?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	≥ 3 databases used?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	Databases used w/ platforms:
	Grey literature used?  <input type="checkbox"/> YES  <input type="checkbox"/> NO		Grey-Lit used:	
<b>Concepts</b>	PICO elements named?  <input type="checkbox"/> YES  <input type="checkbox"/> NO		<b>P</b>	
			<b>I</b>	
			<b>C</b>	
			<b>O</b>	
<b>Limits &amp; Filters</b>	Database supplied limits used?  <input type="checkbox"/> YES  <input type="checkbox"/> NO		<input type="checkbox"/> language  <input type="checkbox"/> dates  <input type="checkbox"/> other: _____	
	Filters created?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	Filters cited?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	<input type="checkbox"/> age  <input type="checkbox"/> publication type : _____  <input type="checkbox"/> humans  <input type="checkbox"/> Other: _____  <input type="checkbox"/> Other: _____	
<b>Articles</b>	Total number of unique articles named?  <input type="checkbox"/> YES  <input type="checkbox"/> NO		Total number = _____	

	Arranged or organized in a citation management system?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	<input type="checkbox"/> Endnote  <input type="checkbox"/> Mendeley  <input type="checkbox"/> Other: _____
<b>Reproducible</b>	At least 1 strategy fully reproducible included for appendix?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	Database strategy included: _____
<b>Date searched</b>	Date searches were run included?  <input type="checkbox"/> YES  <input type="checkbox"/> NO	Date: _____

## EVIDENCE-BASED DIAGNOSTICS

# Risk Factors and Screening Instruments to Predict Adverse Outcomes for Undifferentiated Older Emergency Department Patients: A Systematic Review and Meta-analysis

Christopher R. Carpenter, MD, MSc, Erica Shelton, MD, Susan Fowler, MLIS, Brian Suffoletto, MD, Timothy F. Platts-Mills, MD, MSc, Richard E. Rothman, MD, PhD, and Teresita M. Hogan, MD

## METHODS

### Search Strategy

The design and manuscript structure of this systematic review conform to the recommendations from the Meta-analysis Of Observational Studies in Epidemiology (MOOSE) statement and Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.<sup>19,20</sup> In conjunction with a medical librarian (SF), two investigators (CRC, TH) searched the medical literature from 1950 to January 2014. The medical librarian developed search strategies for the concepts of ED; people 60 years and older; screening; and adverse outcomes including functional decline, readmission, institutionalization, and death. These strategies were established using a combination of standardized terms and key words and were implemented in PubMed 1946-, Embase 1947-, Scopus 1823-, Cochrane Central Register of Controlled Trials (CENTRAL), and clinicaltrials.gov. All searches were completed in January 2014 and limited to English using database-supplied limits. To exclude animals, the librarian used the human filter for PubMed recommended in Cochrane Handbook for Systematic Reviews of Interventions<sup>21</sup> as a model to create similar filters for the other databases searched. All results were exported to EndNote. We used the automatic duplicate finder in EndNote and 910 duplicates

were assumed to be accurately identified and removed, yielding a total of 7,940 unique citations. Nineteen trials were located in ClinicalTrials.gov. Full search strategies for PubMed and Embase are provided in Data Supplement S1 (available as supporting information in the online version of this paper).

Two authors (CRC, TH) reviewed the titles and abstracts to identify potentially relevant articles, which were then retrieved and the full articles reviewed. These authors then independently reviewed these articles for inclusion criteria. In addition, two authors (ES, SF) reviewed abstracts accepted for presentation at national emergency medicine conferences and published in *Academic Emergency Medicine*, *Annals of Emergency Medicine*, *Journal of the American Geriatrics Society*, and *European Geriatric Medicine* from 1990 through March 2014.

Studies and scientific research abstracts were included if they recruited a population of general geriatric adults (age  $\geq 65$  years) in ED settings. We sought to identify instruments that risk stratify undifferentiated older adults regardless of their presenting complaints or ED diagnoses, so disease-specific instruments such as those that risk stratify patients with congestive heart failure<sup>22</sup> or pneumonia<sup>23</sup> were excluded. Similarly, instruments or risk factors for common geriatric syndromes such as standing level falls,<sup>24</sup> delirium,<sup>25</sup> and dementia<sup>26</sup> were excluded because the presence of these conditions identifies potentially vulnerable older adult patients and merits separate systematic reviews to assess each specific risk factor and instrument. Studies that reported sufficient detail on prognostic test and criterion standard results to reconstruct two-by-two tables to estimate both sensitivity and specificity were included. We contacted the authors of studies that assessed prognostic accuracy if they did not report sufficient detail to reconstruct two-by-two tables to obtain the contingency tables for our meta-analysis. If the authors responded and provided the contingency tables, then these studies were included in this systematic review. Letters or scientific abstracts with original research data were included. We excluded non-English language manuscripts, narrative reviews, case reports, and studies focused on therapy.

# Final Steps

Presented by  
Susan Fowler, Director Brown School Library, MLIS

Created by: Susan Fowler, Director Brown School Library, MLIS  
and Angela Hardi, Clinical Resources Librarian, MLIS  
Designing Search Strategies for Systematic Reviews, Spring 2017

---

# Learning Objectives

1. Identify list of items that must be sent to patron
2. Provide librarian written methods
3. Include reproducible search strategies
4. Differentiate responsibilities of librarian and research team moving forward
5. Identify authorship expectations
6. Respond to potential questions about authorship credit or acknowledgement
7. Explain why researchers may request an updated literature search prior to manuscript submission
8. Reflect on lessons learned

# Items to Send to Patron

- Written Methods section regarding search
- Full reproducible search strategies for every resource searched
- Search results
  - For our service at Becker, we send out results via...
    - Citation management library
    - Excel workbook (bibliographic databases results and grey literature results in a separate tab)
- Explanation of how patron can retrieve full-text



# Example Email

**Dear Dr.:**

**Attached is the EndNote Library, Excel workbook, and written methods section including fully reproducible search strategies for the systematic review on speckle tracking in heart ventricles in children. Instructions for optimizing your full-text retrieval are here:**

**<http://beckerguides.wustl.edu/c.php?g=299565&p=3480709>.**

**If there is anything further I can do for you please ask. As always, it is a pleasure working with you.**

**Sincerely,**

**Librarian**

# Full-text Retrieval Instructions

## Systematic Reviews: Full-text Retrieval

Search this Guide

Search

Resources to Support Work in Systematic Reviews

- Home
  - Library Services
  - Searching
  - Full-text Retrieval**
  - Getting Started
  - Databases, etc...
  - Educational Resources
  - Guidelines
- Appraisal and Grading**
  - Becker Librarian Co-Authored Systematic Reviews
  - Rapid Reviews
  - FAQs

### Accessing Full-text Articles

#### Accessing Full-text Articles

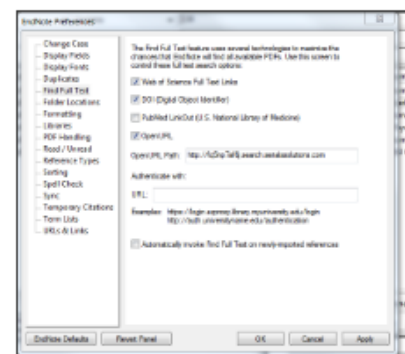
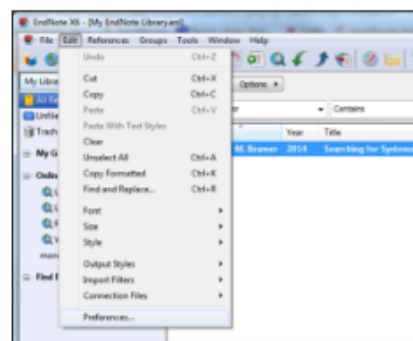
1. Use EndNote to automatically retrieve all online articles held by Becker. Instructions below.
2. Check to see if [Olin Library](#) has remaining articles online.
3. Request remaining articles through [Interlibrary Loan](#). Interlibrary loan is a service provided to you by Becker Library that will obtain articles we don't own on your behalf. There is a [charge](#) of \$ 6.00 per article for Wash U faculty, staff, and students and \$8.00 per article for BJH/BJC/SLCH members.

### EndNote Full Text Retrieval

#### EndNote Full-Text Retrieval

To achieve a "higher rate of full text retrieval" launch your endnote desktop application...

1. Go to "Edit" à "Preferences"
2. Choose "Find Full Text" from the left side menu.



3. Check boxes for Web of Science, DOI, and Open URL\*. In the "OpenURL Path:" box paste <http://fq5np7af6j.search.serialssolutions.com> and then click "Apply".

\* The PubMed LinkOut option may cause a copyright violation explained here <http://www.ncbi.nlm.nih.gov/pmc/about/copyright/>.

# Authorship Responsibilities, Issues, and Questions

---

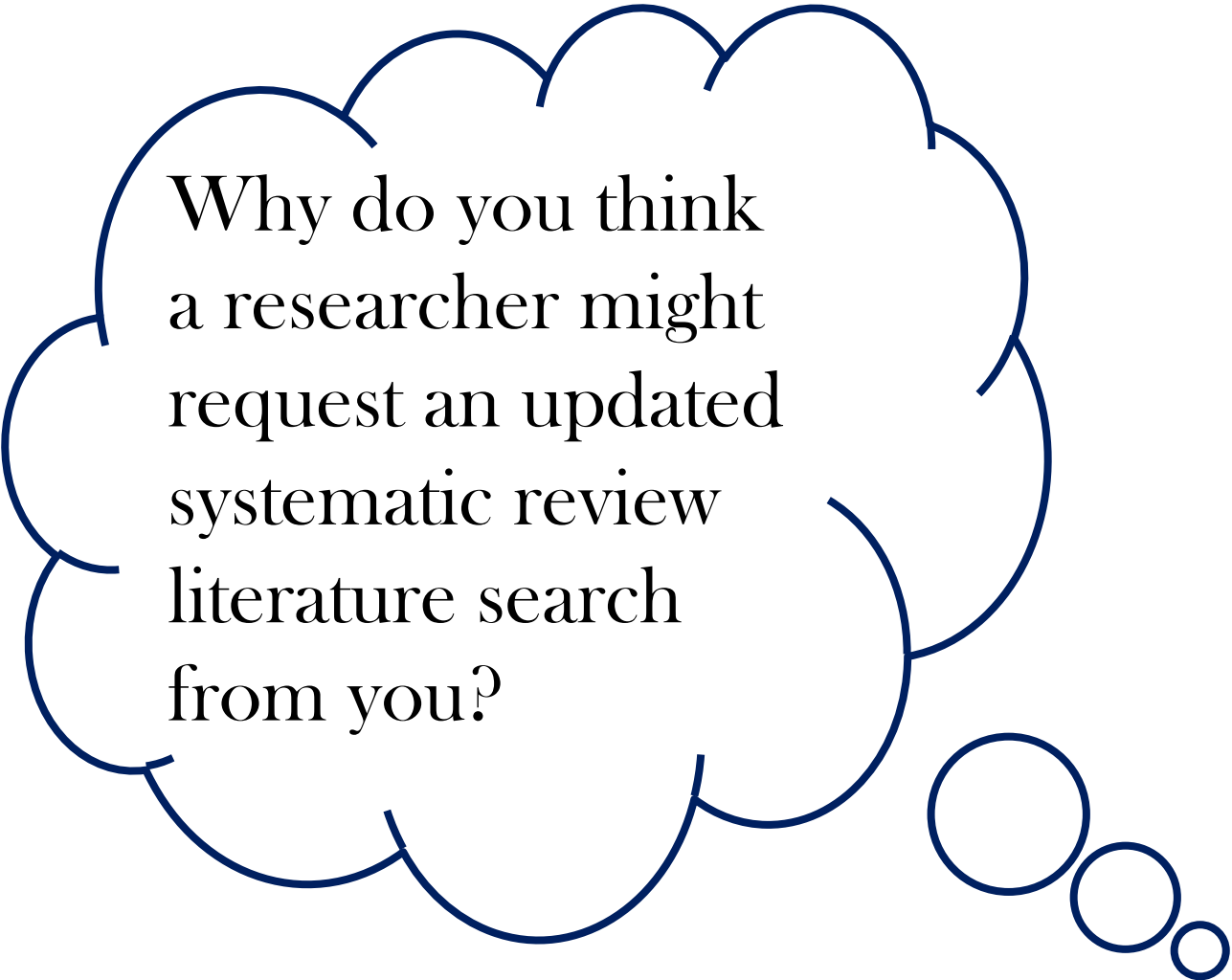
- According to the International Committee of Medical Journal Editors authorship should be based on 4 criteria (all required):
  - Substantial contributions to the conception or **design of the work**; or the **acquisition**, analysis, or interpretation of data for the work.
  - **Drafting the work** or revising it critically for important intellectual content.
  - Final approval of the version to be published.
  - Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

- Will usually be required to sign a form from the publisher. Some publishers will also ask you to clarify what role you played in the creation of the research project and manuscript.
- Should review the manuscript, especially the search methods section, for accuracy and clarity.
- If your search strategies are also going to be published (often in an appendix) double check to make sure they have been copied correctly.

- What if you did not discuss or negotiate authorship with the researcher earlier in the process? Is it too late to do so at this stage?
- What if you do not want to have your name listed as an author?
- What can you do if an author wants to publish your search strategies and/or methods section text without listing you as an author?

# Updating Literature Search Results

---



Why do you think  
a researcher might  
request an updated  
systematic review  
literature search  
from you?



- Gap of time between initial searches and submitting manuscript for publication
- Peer reviewers/journal editors may request updated search before accepting manuscript
- Ensures that any significant research published after the initial search is accounted for or acknowledged in the systematic review manuscript

- Re-run each of the search strategies as noted in your methodology document
- Add a date filter to limit results from the date (or a few days prior to the date) you ran the initial search to the present.
- Export results to your bibliographic management tool
- Note the number of new results found in each database in the methodology document, along with the total number of exported citations, and the total number remaining after removing duplicates
- DO NOT change any of the information about the initial search. Add the information about the updated search as separate information on your methodology document.

# Examples of Updated Methodology Document

## Updated Text from Methodology Document

All searches were completed in March 2014. All results were exported to EndNote and 1,329 duplicates were assumed to be accurately identified and removed for a total of 2,331 unique citations

The literature search was executed again in May 2016 in Pubmed, Embase, Scopus, the Cochrane Library, and Clinical Trials.gov. 809 new citations were found and added to the pool of citation results.

## Embase

1,225 results on 3/31/14

Updated search = 772 results after limiting to 3/30/14-present on 5/31/2016

'pelvic organ prolapse'/exp OR 'uterus prolapse'/exp OR 'pelvic organ prolapse' OR 'urogenital prolapse' OR 'vaginal vault prolapse' OR 'uterine prolapse' OR 'vaginal prolapse' OR 'vagina prolapse' OR 'apical vaginal prolapse' OR 'apical prolapse' OR 'POP' OR 'pelvic organ prolapse quantification' OR 'POP-Q' OR 'genital prolapse' OR 'pelvic organ descent' OR 'pelvic prolapse' OR 'genitourinary prolapse' OR 'uterus

# Open Discussion

Any other questions or concerns about wrapping up a systematic review project?

# Question!

#1

How prepared do you feel to design a reproducible systematic review search?

## ANSWER CHOICE

A

Extremely prepared.

B

Very prepared.

C

Moderately prepared.

D

Slightly prepared.

E

Not at all prepared.