Introduction to Evidence-Based Health Care and the Systematic Review of Evidence
JBI-CSR Training Program Purpose

- Designed to prepare researchers, policy makers and clinicians to develop, conduct and report comprehensive systematic reviews of evidence using the Joanna Briggs Institute SUMARI software.
Aim and Objectives

• To develop a comprehensive understanding of the purposes and principles of evidence-based healthcare in participants.

• The objectives of this module are to prepare participants to:
  – describe the origins and development of evidence-based healthcare;
  – critique the role of evidence in contemporary healthcare practice,
  – describe and discuss the systematic review process; and
  – develop a systematic review protocol.
This module is a prerequisite for all analytical modules and focuses on those stages of a review common to all evidence types:

- Developing a question (PICO/PICo)
- Inclusion Criteria
- Search Strategy
- Searching
- Selecting Studies for Retrieval
Program requirements and useful resources

- Attend all sessions and complete:
  - All group work
  - PICO presentation
  - Self Assessment

- Accredited JBI Reviewer
  - 2 years
  - Publish a review!
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Group work</th>
</tr>
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<tbody>
<tr>
<td>0900</td>
<td>Introduction and overview of module 1</td>
<td>Group work</td>
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<td>0915</td>
<td>Session 1: Introduction to the Joanna Briggs Institute</td>
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<td>Session 4: Developing a review question and inclusion criteria</td>
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<td>Session 5: JBI Comprehensive Review Management System</td>
<td>Group Work 1: PICO question inclusion criteria development in CReMS</td>
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<td>Session 6: Developing a search strategy: a guide to evidence based information retrieval</td>
<td>Group Work 2: Developing a concept map for your clinical question</td>
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<td>Session 7: Searching for the evidence: a guide to the research resources</td>
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<td>Session 8: Selecting studies</td>
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<td>Session 9: Protocol development in JBI CReMS</td>
<td>Group Work 4: Protocol development in CReMS</td>
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Session 1: Introduction to the Joanna Briggs Institute
The Joanna Briggs Institute

- Evidence Based Practice
- Research Institute since 1996
- Royal Adelaide Hospital and the University of Adelaide
- Not-for-profit
- 80+ Centres and Groups, >7000 members in over 47 countries
- Global Leader
The Joanna Briggs Institute

• International collaboration of health scientists, health professionals and health researchers
• To improve global health through providing point-of-care access to:
  – Evidence databases
  – Decision support systems
  – Implementation, evaluation and continuous improvement tools
Home of:

The Joanna Briggs Institute Library

Cochrane Nursing Care Field

International Journal of Evidence-Based Healthcare

International Journal of Nursing Practice

C2 Process and Implementation Methods Sub-Group

www.joannabriggs.org
JBI Vision

• Evidence-informed Best Practice as a central characteristic of all health services.
JBI Mission

• To be the leader in producing, disseminating and providing a framework for the use of the best available research evidence to inform health decision-making to improve health outcomes globally.
The Joanna Briggs Institute
Programs
Centers

Collaborating Centres

Synthesis Transfer Utilisation

The Joanna Briggs Institute
Networks

Evidence Synthesis Network
Evidence Appraisal Network
Evidence Utilisation Network
Collaborating Centres
Synthesis  Transfer  Utilisation
The Joanna Briggs Institute
Members

Educational  Individual  All of Country  Health Care Provider

Evidence Synthesis Network  Evidence Appraisal Network  Evidence Utilisation Network

Collaborating Centres

Synthesis  Transfer  Utilisation

The Joanna Briggs Institute

www.joannabriggs.org
Our History

- Launched as The Joanna Briggs Institute for Evidence Based Nursing In 1996
  - 8 staff
  - 23 members
  - 7 Collaborating Centers in Australia, New Zealand and Hong Kong
- Rapid growth!
The Joanna Briggs Institute
## Europe

1. Belgian Interuniversity Collaboration for Evidence-Based Practice (BICEP)
2. Romanian Centre for Evidence-Based Nursing and Midwifery
3. Scottish Centre for Evidence-Based Care of Older People Glasgow
4. The Wales Centre for Evidence-Based Care
5. The Scottish Centre for Multi-Professional Practice Aberdeen
6. The Spanish Centre for Evidence-Based Health Care
7. The University of Nottingham Centre for Evidence-Based Nursing and Midwifery
8. The University of West London Centre for Evidence Based Nursing and Midwifery
9. The Romanian Centre for Evidence Based Public Health
10. Portugal Centre for Evidence Based Practice
11. Finnish Centre for Evidence-Based Health Care
12. Centro Studi EBN Italy
13. BEST: Bureau d’Echange des Savoirs pour des pratiques exemplaires de soins Switzerland
14. Danish Centre of Systematic Reviews in Nursing
15. Napier University ESG Edinburgh

1,164 health services/universities members in England, Cyprus, France, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, Serbia, Turkey, Scotland (all-of-country), Spain (all-of-country), Switzerland and Wales.
The Americas

1. Brazilian Centre for Evidence-Based Healthcare
2. Indiana Centre for Evidence-Based Healthcare USA
3. Queen’s Joanna Briggs Collaborating Centre Canada
4. Texas Christian University – Harris College of Nursing and Sciences Centre for Evidence-Based Practice and Research USA
5. New Jersey Centre for Evidence-Based Nursing USA
6. Joanna Briggs Institute of Oklahoma USA
7. UCSF Centre for Evidence-based Patient Care Quality USA
8. The Louisiana Centre for Evidence Based Nursing at LSUHSC School of Nursing USA
9. St Elizabeth Health Care ESG Canada

418 health services/ universities members in Chile, Colombia, Ecuador, Mexico, Peru, Puerto Rico, Canada, USA and Venezuela
Africa/Gulf States

1. Cameroon Centre for Evidence Based Health Care (CCEBHC)
2. Ethiopian Malaria Alert Centre: Jimma University, Jimma
3. Kenya Medical Research Institute (KEMRI) Centre for Geographic Medicine Research-Coast, Kilifi
4. Kintampo Health Research Centre (Ghana), Kintampo, Ghana
5. South African Centre for Evidence Based Nursing and Midwifery: University of KwaZulu-Natal, Durban
6. Uganda Centre for Evidence Based Practice (Public Health): Makerere University School of Public Health – Kampala
7. Sidra Centre for Women’s and Pediatric Evidence Based Healthcare Qatar
8. Witwatersrand Centre for Evidence Based Practice: Johannesburg
9. Malaria Alert Center ESG Malawi
10. Ibadan ESG Nigeria
11. Oyo State ESG Nigeria
12. Kigali Health Institute ESG Rwanda
13. Tanzania ESG
14. University of Botswana ESG
15. University of Stellenbosch ESG South Africa

All health services/universities members in Botswana, Burkina Faso, Cameroon, Ethiopia, Ghana, Kenya, Malawi, Rwanda, South Africa, Tanzania, Uganda, Zambia and Zimbabwe

20 health services/universities members in Bahrain, Iran, Israel, Saudi Arabia, Qatar and United Arab Emirates
Asia

1. The Hong Kong Centre for Evidence-Based Nursing
2. National Healthcare Group HSOR Collaborating Centre for Evidence-Based Health Services Management Singapore
3. Yangon Centre for Evidence-Based Health Care Myanmar
4. Fudan Evidence-Based Nursing Centre Peoples Republic of China
5. Yonsei Evidence-Based Nursing Centre of Korea
6. Taiwan Joanna Briggs Institute Collaborating Centre
7. The Thailand Centre for Evidence-Based Nursing and Midwifery
8. Centre for Evidence-Based Practices in Mental Health Care Singapore
9. The Singapore National University Hospital Centre for Evidence-based Nursing
10. The Taiwanese Centre for Evidence-Based Health Care
11. The Centre for Reviews on Health Research and Movement Science Philippines
12. The Japan Centre for Evidence Based Practice
13. Peking University Centre for evidence based nursing and midwifery
14. UST Hospital Department of Anesthesiology ESG Philippines
15. National University Cancer Institute ESG Singapore

44 health services/universities members in Brunei Darussalam, China, Japan, Malaysia, the Philippines, Singapore, South Korea, Taiwan and Thailand
### Australasia

1. The New South Wales Centre for Evidence-Based Healthcare
2. Centre for Evidence-Based Practice South Australia
3. Australian Centre for Community Care University of Queensland
4. The Australian Centre for Rural and Remote Evidence-Based Practice Queensland
5. The Joanna Briggs Institute Aged Care Unit South Australia
6. CSIRO Food and Health South Australia
7. The Queensland Centre for Evidence-Based Nursing and Midwifery
8. The Australian Centre for Evidence-Based Primary Health Care South Australia
9. The Western Australian Centre for Evidence Informed Healthcare Practice
10. The Australian Capital Regional Centre for Evidence-Based Nursing and Midwifery Practice
11. Centre for Chronic Disease Management Monash University Victoria
12. Deakin University Centre for Quality and Risk Management in Health Victoria
13. Dementia Collaborative Research Centre Queensland ESG
14. Royal Perth Hospital ESG Western Australia
15. University of Newcastle Evidence Based Health Care Group ESG New South Wales
16. Royal Adelaide Hospital EUG South Australia
17. St John of God Murdoch EUG Western Australia
18. Sisters of St Joseph EUG New South Wales
19. Aged Care Quality Association EUG South Australia
20. SomerCare Rainbow Chimers EUG Victoria
21. Rural Health Care Practice EUG Queensland
22. Catherine McAuley EUG Victoria

*1,980 health services/universities members Australia, Fiji and New Zealand.*
Our Global Subscription Program via OVID

• Well accepted that improving safety and quality is directly related to:
  – Strengthening clinical governance
  – Basing practice on evidence

• Most health systems do not have evidence based cultures because of:
  – Information overload/growing information base (e.g. MEDLINE ~ 18 million citations)
  – Poor point-of-care access to summarized evidence
  – Systems not evidence-oriented (e.g. policies, documentation)
  – Clinical services (structure, processes and outcomes) not routinely audited
Access to clinical decision support and tools/resources to facilitate evidence informed practice

• Priority of most health systems to move towards access to resources at the point of care
• Resources such as:
  – The JBI Library
  – Cochrane Library
  – Databases (PUBMED, CINAHL, ProQuest; EBSCO Host etc)
  – Guidelines (e.g. AHRQ)
  – Comprehensive, bundled services (JBI COnNECT+ brought to you by OVID)
  – Up to Date
Essential Steps in EBP

• Convert information needs into answerable questions (to formulate the problem);
• Track down the best evidence with which to answer these questions;
• Appraise the evidence critically to assess its validity (closeness to the truth) and usefulness (clinical applicability);
• Implement the results in practice; and
• Evaluate performance.  

(Sackett & Haynes, 1995)
How our global collaboration gets evidence into action

- JBICOnect

(Clinical Online Network for Care and Therapeutics)

Brought to you by The Joanna Briggs Institute and Wolters Kluwer Health - Ovid
### The Joanna Briggs Institute

**Promoting Evidence-Based Healthcare at the point of care**

The Joanna Briggs Institute is an independent, international, not-for-profit, scientific organisation that seeks to promote and support the use of the best available research evidence at the point of care: assisting health professionals and service users to make informed decisions about care.

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#### Point of care

<table>
<thead>
<tr>
<th>JBI MANUAL BUILDER</th>
<th>JBI PAMPHLET BUILDER</th>
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</thead>
<tbody>
<tr>
<td>Build an evidence-based clinical manual tailored to the information needs of your organisation.</td>
<td>Build evidence-based information pamphlets for your patients/clients on a range of health topics.</td>
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#### Appraisal & Implementation

<table>
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<th>JBI JOURNAL CLUB</th>
<th>JBI RAPID</th>
<th>JBI SUMARI</th>
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<tbody>
<tr>
<td>Create your own Journal Club and keep up to date with the latest research in a social and relaxed environment.</td>
<td>Learn how to critically appraise individual research papers using a standardised checklist.</td>
<td>Develop, conduct and report on systematic reviews of multiple research papers.</td>
</tr>
</tbody>
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#### Quality Improvement

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<th>JBI PACES</th>
<th>JBI POOL</th>
<th>JBI COOL</th>
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<tbody>
<tr>
<td>User-friendly tool that makes it easy for health professionals to conduct efficient, time saving, evidence based clinical audits and change practice.</td>
<td>Easy to use tool for the collection and storage of patient related prevalence data.</td>
<td>Easy to use tool for the collection and storage of client related prevalence data.</td>
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#### Research

<table>
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<tr>
<th>JBI TAP</th>
<th>JBI CAN Implement</th>
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<tbody>
<tr>
<td>A simple online tool designed to assist researchers to analyse small qualitative data sets following a three-step thematic analysis process.</td>
<td>A practical guide to assist individuals and groups engaged in adapting existing guidelines for local use.</td>
</tr>
</tbody>
</table>

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[www.joannabriggs.org](http://www.joannabriggs.org)
Information in “nodes”

• Aged Care
• Cancer Care
• Midwifery Care
• Rehabilitation
• Burns Care
• Mental Health
• Infection Control
• Wound Healing and Management

• General Medicine
• Surgical Services
• Health Management and Assessment
• Emergency and Trauma
• Paediatrics
• Tropical and Infectious Diseases
• Chronic Diseases
• Diagnostic Imaging
Translation

- Spanish
- Japanese
- Simplified Chinese
- Burmese (partial)
- Portuguese (partial)
- Italian (partial)
Core JBI Training Programs

• Evidence Based Clinical Fellowship Program
  – ~ 200+ Fellows now JBI Fellows Alumni internationally

• Comprehensive Systematic Review Training Program
  – Over 3000 trained internationally since 2002

• Train the Trainer Program available for both
Session 2: Introduction to Evidence
Informed Health Care
Evidence-based .....?

• Evidence-based medicine
  – inception
  – As EBHC, but specific to medical practice
• Evidence-based Nursing
• Evidence-based Policy Making
• Evidence-based....

EBHC incorporates all health professions!
Evidence-based Medicine

• ‘the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. Evidence-based clinical practice requires integration of individual clinical expertise and patient preferences with the best available external clinical evidence from systematic research and consideration of available resources’

(Guyatt et al. 2008:783)
Evidence-based Health Care

- Evidence based health care takes place when decisions that affect the care of patients are taken with *due weight* accorded to *all valid, relevant information* (Hicks, 1997)
The JBI Model of Evidence-based Healthcare
Evidence-based Practice

evidence, context, client preference, judgement
Global Health

Evidence-based Practice
evidence, context, client preference, judgement
Session 3: Introduction to the Systematic Review of Evidence
Systematic Review

• Also called “Research Synthesis”

• Is an attempt to integrate empirical data for the purpose of:
  – uncovering the international evidence and
  – producing statements about that evidence to guide decision making

• Requires explicit and exhaustive reporting of the methods used in synthesis
Systematic Review

• ‘...an attempt to minimize the element of arbitrariness...by making explicit the review process, so that, in principle, another reviewer with access to the same resources could undertake the review and reach broadly the same conclusions’

Characteristics of a SR

- Protocol driven process
- Clearly stated set of objectives with pre-defined eligibility criteria for studies
- Explicit, reproducible methodology
- Systematic search that attempts to identify all studies that would meet the eligibility criteria
- Assessment of the validity of the findings of the included studies
- Systematic presentation, and synthesis, of the characteristics and findings of the included studies

(Pearson, Weeks & Stern, 2011)
Steps in a Systematic Review

- Formulate review question
- Define inclusion and exclusion criteria
- Locate studies
- Select studies
- Assess study quality
- Extract data
- Analysis/summary and synthesis of relevant studies
- Present results
- Interpret results/determining the applicability of results

(Pearson, Weeks & Stern, 2011)
Systematic Review

• The notion of and methods for establishing credibility in systematic reviews has been extensively developed and debated

• In terms of quantitative evidence:
  – Emphasis on reducing bias and increasing validity
  – Degree of credibility established through critique and by applying levels of evidence

• In terms of qualitative evidence:
  – Emphasis on rigour of research design and transferability
  – Degree of plausibility established through critique and by applying levels of plausibility
Meta-analysis

• Quantitative evidence
  – Questions of Effectiveness, Feasibility and/or Appropriateness

• Use of statistical methods to combine the results of various independent, similar studies

• More precise calculation of one estimate of treatment effect than could be achieved by any of the individual, contributing studies

• Only forms a part of the systematic review in which it appears
Meta-synthesis

- Qualitative evidence
  - Questions of Meaningfulness, Feasibility and/or Appropriateness
- Qualitative analysis of a number of independent qualitative research studies and text
- Use of qualitative methods of combining the findings of individual studies
- Only forms a part of the systematic review in which it appears
Comprehensive/Mixed method Review

• Combines both quantitative and qualitative findings and addresses multiple forms of evidence
  – FAME
The JBI Software

System for the Unified Management, Assessment and Review of Information
Consists of the following components

Comprehensive Review and Management System
Keeps all review information together and generates a report that may contain elements from all other SUMARI modules
- Protocol
- Reviewers
- Search strategy
- Bibliography - retrieved studies
- Bibliography - non selected studies
Qualitative Assessment and Review Instrument
Narrative Opinion and Text Assessment and Review Instrument
Meta-Analysis of Statistics Assessment and Review Instrument
Analysis of Cost Technology and Utilisation Assessment and Review Instrument
Session 4: Developing a Review question and inclusion criteria

- Formulate PICO/PICo Question
- Develop Search Strategy
- Searching for the Evidence
- Selecting Studies
Question Development

• Verify that the question has not already been addressed (i.e. search protocols and systematic review reports in the JBI and Cochrane Libraries and others)
Question Development

• Aim is to provide a framework for the development and conduct of the review
• A good question supports the review, a poor question risks confounding the review
• A good question responds to identified priorities and needs
Question Development

• Reviews of effects & economics:
  – Population
  – Intervention
  – Comparator
  – Outcome

• Reviews of qualitative & Textual data:
  – Population
  – Phenomena of Interest
  – Context
Questions of the effects of interventions

• Population:
  – The most important characteristics, including:
    • demographic factors of the population (e.g. age, gender, ethnicity)
    • socioeconomic factors
    • the setting (e.g. hospital, community etc)
Questions of the effects of interventions

• Intervention and Comparator
  – Primary intervention of interest (treatment group)
  – Comparator (control group)
    • Passive (placebo, no treatment, standard care, or a waiting list control)
    • Active (variation of the intervention, a drug, or kind of therapy)
Questions of the effects of interventions

• Outcomes
  – Identify the primary outcome/s in order to reach a clinically relevant conclusion
  – Secondary outcomes may be required
  – Outcomes should be stated neutrally, covering benefits and adverse effects
  – Avoid use of surrogate outcomes unless clearly reasoned in the background
  – Consider how the type and timing of outcome measurements impacts on outcome measurement
Example

• Are antiseptic washes more effective than non antiseptic washes at preventing nosocomial infections in patients undergoing surgery?
Example

- Are antiseptic washes more effective than non-antiseptic washes at preventing nosocomial infections in patients undergoing surgery?
Questions of the experiential evidence

• Qualitative and textual reviews:
  – Re-focus to phenomena of Interest, not intervention,
  – and Context not comparator

• The phenomena of Interest relates to a defined event, activity, experience or process

• Context is the setting or distinct characteristics
Example

- What are caregivers experiences of providing home-based care to persons with HIV/AIDS in Africa?
Example

- What are caregivers' experiences of providing home-based care to persons with HIV/AIDS in Africa?
PICO / PICo

• Constructing a well-built clinical question is a fundamental skill
• Divide your question following the PICO/PICo model
• The question operationalizes the review by forming the basis for inclusion and exclusion criteria
Inclusion Criteria: Effects

• Draws upon:
  – Population characteristics
  – Intervention or exposure
  – Comparator - active or passive
  – Outcomes of interest

• Study type and other elements of the review such as language, year of publication etc
Inclusion Criteria: Experience

• Draws upon:
  – Population characteristics
  – Phenomena of Interest
  – Context

• Study type and other elements of the review such as language, year of publication etc
FAME and SUMARI

• Most topics can be systematically reviewed
• Focus on Feasibility, Appropriateness, Meaningfulness and Effectiveness of healthcare policies, interventions and phenomena
Session 5: JBI Comprehensive Review Management System (CReMS)
Enter username and password to login to Crems.

Username
Password

Ok  Cancel  Work offline
1 Drugs for DVT
Title of my review
Advising doctoral students
The relationship between error and harm in primary care: a systematic review
DNA test review 2
DNA test review
TestDNA
The effectiveness of SUMARI v5.0 versus v4.0 for producing a systematic review: A systematic review
Add New Review

Title: Anti-thrombolytic drugs for the treatment and management of deep vein thrombosis: a systematic review

Year: 2011

Primary Reviewer: Ed Aromataris

Secondary Reviewer: 

Non JBI Review: No

Insert  Undo  Cancel
# Anti-thrombolytic drugs for the treatment and management of deep vein thrombosis: a systematic review

## Authors Information

- **Primary Reviewer**: Edoardo Aromataris
- **Secondary Reviewer**: Craig Lockwood
- **Associate Reviewers**:

## Select one or more of the SUMARI Analytical Module(s) you will use dependent on the type of evidence

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<td>Economic</td>
<td>ACTUARI</td>
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![Set button](button.png)

## Review Question:

![Box](box.png)

## Background:

![Box](box.png)

## Inclusion Criteria

- **Types of Participants:**

- **Types of Intervention(s)**

  (phenomena of interest):

- Completed creating new review!
Anti-thrombolytic drugs for the treatment and management of deep vein thrombosis: a systematic review

Select one or more of the SUMARI Analytical Module(s) you will use dependent on the type of evidence

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<td>Economic</td>
<td>ACTUARI</td>
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Review Question:

intervention#: on #state outcome#
More specifically, the objectives are to identify:
The effectiveness of #insert text#
on #insert text#
in #insert text#

Completed creating new review!
Anti-thrombolytic drugs for the treatment and management of deep vein thrombosis: a systematic review

Please select quantitative study design(s) to be included
- Experimental (e.g. RCT, quasi-expt)
- Observational (e.g. Cohort/Case control)
- Descriptive (e.g. Case Series Studies)

Type of Study:

Search Strategy:
The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilised in this review. An initial limited search of MEDLINE and CINAHL will be undertaken followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe article. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference list of all identified reports and articles will be searched for additional studies. Studies published in #insert language(s)# will be considered for inclusion in this review. Studies published #insert dates# will be considered for inclusion in this review.
The databases to be searched include:
- #insert text#
The search for unpublished studies will include:
- #insert text#
Initial keywords to be used will be:
- #insert text#

Please select quantitative study design(s) to be included
- Experimental (e.g. RCT, quasi-expt)
- Observational (e.g. Cohort/Case control)
- Descriptive (e.g. Case Series Studies)

Assessment of Methodological Quality: for methodological validity prior to inclusion in the review using standardised critical appraisal instruments from the Joanna Briggs Institute Meta Analysis of Statistics Assessment and Review Instrument (JBI-MASTARI) (Appendix VI). Any disagreements that arise between the reviewers will be

Completed creating new review!

www.joannabriggs.org
Anti-thrombolytic drugs for the treatment and management of deep vein thrombosis: a systematic review

Please select quantitative study design(s) to be included

☐ Experimental (e.g. RCT, quasi-expt)  ☐ Observational (e.g. Cohort/Case control)  ☐ Descriptive (e.g. Case Series Studies)

Assessment of Methodological Quality: for methodological validity prior to inclusion in the review using standardised critical appraisal instruments from the Joanna Briggs Institute Meta Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) (Appendix V). Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer.

Data Collection: Data will be extracted for all included studies.

Data Synthesis: The study outcomes will be synthesised using a narrative synthesis, and where appropriate, a statistical meta-analysis will be performed.

Conflicts of Interest:

Acknowledgements
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**Add study to current review**

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- Title:
- Journal:
- Year:
- Volume:
- Issue:
- Page(s):

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research and feminist research. In the absence of research studies, other text such as opinion papers and reports will be considered in a narrative summary.

Types of Participants:
The qualitative component of this review will consider publications that include #describe participants#

Types of Intervention(s)/Phenomena of Interest:
The qualitative component of this review will consider studies that investigate #insert text#

Types of Outcome measures:

Search Strategy:
The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilised in each component of this review. An initial limited search of MEDLINE and CINAHL will be undertaken followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe article. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference list of all

Method of the review (Critical Appraisal tool/s):
Qualitative papers selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardised critical appraisal instruments from the Joanna Briggs Institute Qualitative Assessment and Review Instrument (JBI-QARI) (Appendix V).*

*Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer.

Data Collection/Extraction:
Qualitative data will be extracted from papers included in the review using the standardised data extraction tool from the Joanna Briggs Institute Qualitative Assessment and Review Instrument JBI-QARI (Appendix VI).*

*The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific

Data Synthesis:
produce a single comprehensive set of synthesised findings (Level 3 findings) that can be used as a basis for evidence-based practice. Where textual pooling is not possible the findings will be presented in narrative form.

Results
Description of Studies:

Table of studies found and selected for retrieval:
The effectiveness of monophasic cardioversion compared with biphasic cardioversion in reverting ventricular tachycardia in adults

Zuben Florence RN BN GradDiplNSC and Craig Lockwood

1Research Fellow, The Joanna Briggs Institute. Contact: 08 8303 6480
2JBI Research Unit. Contact: craig.lockwood@adelaide.edu.au 33642

Executive summary

Background

Transient delivery of electrical current causes a momentary depolarization of most cardiac cells. This allows the sinus node to resume normal pacemaker activity. In the presence of reentrant-induced dysrhythmia, such as paroxysmal supraventricular tachycardia (PSVT) and ventricular tachycardia (VT), electrical cardioversion interrupts the self-perpetuating circuit and restores a sinus rhythm. Electrical cardioversion is much less effective in treating arrhythmia caused by increased automaticity (e.g., diguitalis-induced tachycardia, catecholamine-induced arrhythmia).

Objectives

The overall objective of this systematic review is to determine the effectiveness of monophasic cardioversion in comparison to biphasic cardioversion in reverting ventricular tachycardia in adults.

Inclusion criteria

Types of participants

This review will consider studies that include adult hospitalised patients requiring cardioversion.
### MASTARI data extraction instrument

**Extraction Details:** Extraction - Name (2011) - Randomised Control Trial / Pseudo-randomised Trial

**Study Information**

- **Method**
- **Setting**
- **Participants**
  - **# Participants**
  - **Group A:**
  - **Group B:**
- **Interventions**
  - **Interventions A:**
  - **Interventions B:**
- **Authors**
- **Conclusion**
- **Reviewers**
- **Comments**
- **Complete**
  - **No**

* denotes field which will appear in report appendix.
## Appendix VII - Included Studies

### QARI

<table>
<thead>
<tr>
<th>Study</th>
<th>Methods</th>
<th>Participants</th>
<th>Intervention</th>
<th>Outcomes</th>
<th>Notes</th>
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<tbody>
<tr>
<td>[1]. Alexa et al, 2010</td>
<td>observation</td>
<td>200</td>
<td>xx</td>
<td>xx</td>
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<tr>
<td>[0]. Melanie et al, 2010</td>
<td>testing</td>
<td>1.0</td>
<td>bugs</td>
<td>app needs thorough testing</td>
<td>need to be fixed asap</td>
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<tr>
<td>[0]. antila et al, 2009</td>
<td>xx</td>
<td>xx</td>
<td>xx</td>
<td>xx</td>
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<td>[0]. froggy, 2111</td>
<td>bjebkn</td>
<td>netchn</td>
<td>nhhc</td>
<td>nhgnh</td>
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### MASTARI

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<tr>
<th>Study</th>
<th>Methods</th>
<th>Participants</th>
<th>Intervention A</th>
<th>Intervention B</th>
<th>Notes</th>
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<tr>
<td>[0]. Boggenstatter et al, 2009</td>
<td>RCT</td>
<td>58 pilots and crew</td>
<td></td>
<td>The two factors (age of information and transfer-appropriate encoding) that predicted information transmission accuracy appear clearly related to memory processes, particularly size of encoding. The practical applications of this study include: quantitative information may be inaccurate, technical solutions may support information retrieval, and medical professionals can be</td>
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and the QARI View detailing the relationships between Study Findings, Categories and Synthesised Findings is in Appendix IX.

### Synthesised Findings

<table>
<thead>
<tr>
<th>Finding</th>
<th>Category</th>
<th>Synthesised Finding</th>
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<tbody>
<tr>
<td>ability to do subgroup</td>
<td>-</td>
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<tr>
<td>finding 1</td>
<td>-</td>
<td>transfer synthesis</td>
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<tr>
<td>will this insert prior to completion of synthesis?</td>
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Crems works! not yet
Group Work 1

- PICO / PICO question and inclusion criteria development in CReMS
- Reporting back
Session 6: Developing a Search Strategy: A guide to evidence based information retrieval
Searching

Characteristics of an effective search strategy

• Sensitive – find as many relevant studies as possible
• Minimise bias – think about finding/including studies that are not in major databases
• Efficient – look in the place you expect to have highest yield
Search Strategy

- Features of search strategy
  - Sensitivity – ability to identify all the relevant studies
  - Specificity – ability to exclude irrelevant studies, also known as precision

- Inverse relationship between sensitivity and specificity – means that a large number of articles retrieved may not be relevant to the review question
  - High sensitivity will tend to have low specificity
Search Strategy Steps

• Initial Search
  – initial search of MEDLINE, CINAHL, followed by analysis of text words in the title and abstract

• Second Search
  – all identified key words and index terms across all databases

• Third Search
  – references of identified studies, unpublished studies, grey literature, government and societal websites, experts etc
Documenting your Search

• Important! Keep an accurate record of the search and how it was performed
  – Same requirement as primary research
  – Duplicate the search strategy
• Avoid having to repeat searches
• Where and how to document?
  – Should be detailed in the ‘search strategy’ section of CReMS
  – Reference management software – Reference Manager, ProCite, or Endnote
Some Problems with Identifying Studies

- Duplication of studies
- Unclear titles
- Lack of abstract
- Unpublished studies (publication bias)
  - there is a tendency to publish studies with only positive results in peer-reviewed journals
A Few Search Tips

• Initial terms and keywords
  – Accurately describe initial studies relevant to your review

• Adding new terms
  – Pilot them and see whether you get relevant material

• Date limits
  – no point in searching beyond certain periods for some new drugs or surgeries
Initial terms and keywords

• Databases such as PubMed and Mednar are good places to start
• Identify terms of reference in a short space of time, document keywords, concepts, relationship words
• Narrow focus by years and population (e.g. adults or children), type of study and assess the likely volume of information available
Subject Headings

- Categorization of information is important to control data, provide commonality, consistency and decrease spelling and cultural differences.
- MEDLINE, EMBASE, CINAHL and other databases have standardized subject terms as a controlled vocabulary or thesaurus.
- MEDLINE, EMBASE, CINAHL and other databases have different approaches to indexing and different words/language.
Study Design

• There are a number of ways to find studies in different databases
  – Hierarchical approaches work well for questions of effects, but are not relevant for qualitative or textual questions.
Constructing your Search

• Break up the search question
• Don’t over complicate the search by putting too many terms in
• Don’t search across major databases at once (e.g. both CINAHL & EMBASE) as descriptors are not the same in all databases
• Test search queries to establish the relevance of the results. If not refine the search.
Constructing your Search

- Allow for English and American spellings. Use a wildcard character, in most databases this is a ‘?’ (i.e. Colo?r results = colour or color or randomi?ed results = randomized or randomised)
- Other wildcards like ‘$’ are unlimited for example: organi$ = organising or organizing or organised or organisation
- Variable number of characters: limit the truncation dog$2 will find dogma (i.e. two letters after dog)
Constructing your Search

• Boolean operators (AND/OR/NOT) are important for bringing key concepts together.
• The ability to assign limits including date ranges or types of studies can increase the specificity of the search
What are the effects of peri-operative warming strategies on the occurrence of hypothermia in adults undergoing surgical interventions?
Medline Search Example

1  *hypothermia/ (4119)
2  *rewarming/ (319)
3  exp Heat/ (73067)
4  body temperature.mp. or exp Body Temperature/ (62802)
5  thermodynamics.mp. or exp Thermodynamics/ (115171)
6  skin temperature.mp. or exp Skin Temperature/ (8808)
Medline Search

7 intraoperative complications.mp. or exp Intraoperative Complications/ (25072)
8 surgical procedures, operative.mp. or exp Surgical Procedures, Operative/ (1553012)
9 intraoperative care.mp. or exp Intraoperative Care/ (10130)
10 exp Postoperative Complications/ or exp Postoperative Care/ or post operative care.mp. (327086)
Medline Search

11  4 or 5 or 6 (172864)
12  7 or 8 or 9 or 10 (1666628)
13  1 or 2 (4279)
14  11 and 12 and 13 (472)
15  limit 14 to english language (396)
Concept Map

• A concept map or logic grid can help you visually group words and map your PICO/PICO with your MeSH/EMTREE terms and keywords
Group Work 2

- Develop a concept map for the review question
- Reporting back
Session 7: Searching for the Evidence: A guide to the research resources

- Formulate PICO/PICO Question
- Develop Search Strategy
- Searching for the Evidence
- Selecting Studies
Types of Sources

• What to use?
  – Scientific databases
  – Scientific Journals
  – Organisations
  – Websites
  – Libraries
  – Experts
Types of Resources

• Peer reviewed journal articles
  – Research
  – Opinion/commentary/letters
• Grey Literature
  – also known as Gray, Deep Web or Invisible Web Literature
• Theses/Dissertations
• Data – Statistics
• Circulars
• Reports
Computer Bibliographic Databases

Platform vs. Database

- OVID
- DIALOG
- LexisNexis
- STN
- Scirus
- +…

- Medline
- CINAHL
- EMBASE
- +…
Computer Bibliographic Databases

• What is the focus of the Database?
  – Search those relevant to your question

• Know the language of the Database
  – How is it indexed?
  – Do I use .ae or /ae for adverse events?
  – Use limits - are these to be assigned before or after the search?
The JBI Library

• Includes systematic reviews of healthcare interventions and implementation reports conducted by the Joanna Briggs Institute and Collaboration:
  – Published on the Internet
  – Full text is available to subscribers
  – Includes the JBI Database of Systematic Reviews and Implementation Reports, Best Practice Information Sheets and Technical Reports
The Cochrane Library

- Includes systematic reviews of healthcare interventions that are produced and disseminated by The Cochrane Collaboration
  - Published quarterly on CD-ROM and the Internet
  - Review abstracts free of charge
  - The full text of all Cochrane databases are available to subscribers via publisher Wiley-Blackwell
Medline

• U.S. National Library of Medicine's (NLM) premier bibliographic database
  — ~18 million references to journal articles in life sciences with a concentration on biomedicine.
  — Indexed with MeSH and date back to 1949.
  — Information on health, life sciences, behavioural sciences, chemical sciences, bioengineering and medicine
  — Differences between MEDLINE and PubMed
    • Pubmed beyond the scope of MEDLINE i.e. chemistry
    • Pubmed contains ‘in process’ information
    • Some journals not yet in MEDLINE
Embase

• Produced by Elsevier Science
  – Biomedical and pharmaceutical database
  – 16 million+ indexed records, over 7000 peer reviewed journals, from 1974 to current
  – 600,000+ items added annually
  – Uses own life science thesaurus called EMTREE
  – Contains journal articles, reports, conference papers, proceedings, letters, and reviews
  – ~ overlap of titles with MEDLINE of around 60%
  – Important source of European literature
CINAHL

- Specialist nursing and allied health database from National League for Nursing and the American Nurses’ Association
  - Covers nursing, biomedicine, health sciences librarianship, alternative/complementary medicine, consumer health and 17 allied health disciplines
  - Access to health care books, nursing dissertations, selected conference proceedings, standards of practice, educational software, audiovisuals and book chapters
  - Internal subject thesaurus with over 7,000 terms - 2,000 unique to CINAHL
Other databases…

- PsychInfo
- Scopus
- OTseeker
- PEDro
- POPLINE
- Proquest
- ScienceDirect
- TRIP
- Wiley InterScience
- SPORTDiscus
- ISI Web of Science
- + many more…!

Consult your Librarian!
Research and Trials Registers

- Cochrane library
  - CCTR
- Clinical trials.gov
- Controlled Clinical Trials
- NHS Research Register
- REGARD (database of the ESRC)
Grey literature

- Mednar
- WorldWideScience
- PsycEXTRA
- OAIster
- OpenGrey (SIGLE)
- Google Scholar
Theses & Dissertations

- Index to Thesis
- Networked Digital Library of Theses and Dissertations (NDLTD)
- ProQuest Dissertations and Theses Database
- EThOS - Beta - Electronic Thesis Online System
- National repositories of digital theses
Government Websites

• Are there government agencies that may have evidence relevant to your review question?
  – NCCAM
  – CDC
  – NH&MRC
  – AHRQ
Search Logistics!

- Apply Search Strategy to databases
- Export to bibliographic software
  - E.g. Endnote
- Document process
Session 8: Selecting Studies

1. Formulate PICO/PICo Question
2. Develop Search Strategy
3. Searching for the Evidence
4. Selecting Studies
Study Selection

- Study Selection is an initial assessment that occurs following the review Search.
- It addresses the question “should the paper be retrieved?”
  - 2nd assessment that occurs after retrieval and addresses the question “should the study be included in the review?” - this is CRITICAL APPRAISAL!
- It is essential to use two assessors in both the selection and critical appraisal processes to limit the risk of error.
Selection Process

- Aims to select only those studies that address the review question and that match the inclusion criteria documented in your protocol.
- Scan titles and abstracts.
- Err on the side of caution - Inclusive!
- If uncertain? - Retrieve - scan full text.
- The selection should be:
  - Transparent
  - Reproducible
Example

• Is the article published in the stated years?
• Does the population studied meet the criteria?
  – E.g. adults or children or both?
• Does the study look at the interventions or phenomena stated in the research question
  – E.g. oral or I.V. administration
• Is it the correct study design?
  – E.g. RCT or meta-analysis
Group Work 3

- Selecting Studies
- Reporting Back
  - Discussion of results of selection exercise
Session 9: Protocol Development in CReMS
Protocol Development

• The usefulness of the review stems from the robustness of the protocol

• The protocol:
  – Guides the specific direction of the review
  – Describes inclusion criteria
  – Identifies the appropriate search sources and resources
  – Methods of appraisal, extraction and synthesis
Protocol structure

• Background
• Objectives/Question
• Criteria:
  – PICO/PICo
• Search strategy

• Methods:
  – Methodological quality
  – Data extraction
  – Data synthesis
  – References

• Appendices
  – Critical appraisal forms
  – Data extraction forms
Background

• Describe the issue under review, including:
  – Target population, interventions, outcomes,
• Should concisely overview the main elements of the review, and issues within the topic of choice
• Provide adequate detail to justify the conduct of the review and choice of inclusion criteria
• Provide necessary definitions of important terms and concepts
• ~1000 words
Group Work 4

- CReMS Trial and Protocol development
- Reporting Back
Thus far...
Objectives

The objective of this review is to identify the best available evidence related to the prevention of short-term indwelling catheter-associated urinary tract infection (UTI). More specifically, the review questions are:

- Are interventions aimed at minimising the introduction of microorganisms into the urinary system during catheterisation effective in reducing catheter-related UTI/bacteruria?
- Are interventions aimed at preventing intraluminal contamination of urinary catheters by microorganisms effective in reducing catheter-related UTI/bacteruria?
- Are interventions aimed at preventing extraluminal contamination of urinary catheters by microorganisms effective in reducing catheter-related UTI/bacteruria?
- Are other interventions effective in reducing the incidence of catheter-related UTI/bacteruria?

Review methods

Inclusion criteria

Types of participants

The review included adult patients with short-term urethral catheters. For the purposes of this review, short-term catheterisation was defined as between 1 and 14 days of catheterisation. Studies focusing on adults with long-term and suprapubic catheters were excluded from the review.

Types of intervention

Interventions of interest were those related to the prevention of catheter-related UTI and include:

- sterile vs. non-sterile insertion techniques;
- special coatings on catheters vs. standard non-coated catheters;
- the use of saline flush solutions;
- the use of antibacterial flush solutions;
- solutions added to the urinary drainage bag;
- maintenance of a closed urinary drainage circuit;
- the use of anti-reflux valves;
- antibiotic creams applied to the external meatus-catheter interface;
- mental care regimens;
- the use of new biomaterials;
- education programs; and
- changed delivery care practices

Types of outcomes

The primary outcome of interest was the difference in the rates of UTI between experimental interventions and the controls. The definitions of UTI and bacteruria used during this systematic review were based on the definitions identified during the initial search of the literature. For UTI these were 1) $>10^6$ colony forming units (cfu/ml) or 2) $>10^5$ cfu/ml, with clinical indications of UTI such as pyrexia (38°C) or suprapubic tenderness. For bacteruria, these were $>10^5$ cfu/ml.

Types of studies

This review considered randomised controlled trials (RCTs). In the absence of RCTs, other research designs such as nonrandomised controlled trials and before and after studies were considered for inclusion in a narrative summary to enable the identification of current approaches and possible future strategies for minimising the risk of catheter-related UTI.
...your JBI Review

- Clear description of search strategy used

Appendix I: Example search strategy

CINAHL
S13 S11 and S10 Limiters - Publication Year from: 2002-2008; Language: English, German; Age Groups: All Adult
S12 S11 and S10
S11 S9 and S8
S10 S6 or S5
S9 S7 or S1
S8 (S4 or S3)
S7 nurse-led or nurse-managed or nurse-directed
S6 (MH "Cross Sectional Studies") or (MH "Nonexperimental Studies") or (MH "Prospective Studies") or (MH "Case Control Studies") or (MH "Case Studies", "Double-Blind Studies")
S5 (trial) or (MH "Clinical Trials") or (MH "Nonrandomized Trials")
S4 cardiac clinic
S3 (clinic) or (MH "Cardiac Patients")
S2 (MH "Coronary Disease+)

MEDLINE
1. nurse-led.mp.
2. exp Nurses/ or nurse-directed.mp.
3. nurse-managed.mp. or Nursing Care/
4. chest pain/ or angina pectoris/
5. cardiac clinic.mp.
6. coronary heart disease.mp. or Coronary Disease/
7. secondary prevention clinic.mp.
8. exp Myocardial Infarction/
9. chd.mp.
10. 4 or 6 or 8 or 9
11. cardiac care.mp.
12. 1 or 2 or 3 or 11
13. clinic.mp.
14. 5 or 7 or 13
15. 10 and 12 and 14
16. limit 15 to (humans and yr="2002 - 2008")
17. trial.mp. or exp Randomized Controlled Trial/ or exp Clinical Trial/ or exp Controlled Clr
18. study.mp.
19. 17 or 18
20. 16 and 19
21. from 20 keep 3,7 [mp=title, original title, abstract, name of substance word, subject heading word]
Search strategy

The search strategy (Appendix I) included both published and unpublished studies and utilised a three-step search strategy. An initial search of MEDLINE and CINAHL databases was undertaken followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe the article. A second extensive search using all identified keywords and index terms was then undertaken across all included databases. Thirdly, the reference list of all identified reports and articles was searched for additional studies. Initial keywords included urinary, catheter, short-term, indwelling and urinary tract infection. The search period was from May 2004 to July 2009.

The databases searched included:

- MEDLINE
- CINAHL
- Current Contents
- Expanded Academic Index
- Cochrane Library
- Embase EBM Reviews
- EMBASE
- Scopus
- TRIP
- Biomed Central

The search for unpublished studies included:

- Dissertation Abstracts International
- The Networked Digital Library of Theses and Dissertations (NDLTD)
- Google Scholar

All studies identified during the database search were assessed for relevance to the review based on keywords in the title, abstract and descriptor/MeSH terms. Studies identified from reference list searches were assessed for relevance based on the study title.
...your JBI Review

- Export to bibliographic software
  - Endnote
  - Reference Manager
  - +....

- Results of search clearly described
1004 references

832 references
Scanned Ti/Ab

117 studies retrieved

715 do not meet Incl. criteria

82 do not meet Incl. criteria

35 studies for Critical Appraisal

...your JBI Review

• Results of selection process clearly described and documented
Don’t forget these useful resources!