AHRC Research Toolkit
Published by the State of Queensland (Metro North Hospital and Health Service), June 2017

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1. Research or Quality Assurance activity?

**Background**

Quality assurance (QA) and evaluation activities often apply methods that are also applied in research such as surveys, observations and clinical audits. However, if QA activities are intended to be published in a journal or presented at a conference, a Human Research Ethics Committee (HREC) review or waiver is required.

The NHMRC document ‘Ethical Considerations in Quality Assurance and Evaluation Activities’ ([https://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e111_ethical_considerations_in_quality_assurance_140326.pdf](https://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/e111_ethical_considerations_in_quality_assurance_140326.pdf)) provides useful information for differentiating QA and research activities. It also provides helpful hints on how to appropriately consider ethical requirements for projects where there is difficulty distinguishing between QA and research.

Research projects will routinely require either low risk or full ethical review from the relevant HREC (refer to Section 6 of this document). QA projects that are likely to be targeted for publication should consider submitting a Request for HREC Waiver (refer to Section 6 of this document).

**Key references / resources**

‘Ethical Considerations in Quality Assurance and Evaluation Activities’
2. Developing a QA or research question

Background
One of the most commonly used and simple formulas to assist the development of a research question is called the PICOS formula. PICOS divides the research question into the 5 component parts that make up a QA or research project:

- **P:** Population or patient
- **I:** Intervention, indicator or exposure of interest
- **C:** Comparator or control
- **O:** Outcome/s measured
- **S:** Setting (may be specified within ‘Population or patient’)

A well-constructed PICOS question will provide the ‘backbone’ for a QA or research project across the continuum from project conception to dissemination of findings (presentation and publication). The research question should be revisited throughout the project lifecycle.

Key references / resources
Please see Appendix 1 of this document for the AHRC PICOS Research question development and literature review template.

The Cochrane Library has developed a very helpful short 15-30 minute PICO tutorial which is available here: [http://learntech.physiol.ox.ac.uk/cochrane_tutorial/cochlib0e84.php](http://learntech.physiol.ox.ac.uk/cochrane_tutorial/cochlib0e84.php)

3. Literature searching and critical appraisal

Background
A PICOS-based literature search strategy is often helpful to:
- Identify studies that may have researched similar ideas
- Identify potentially useful methodological approaches (or ones to consider avoiding!)
- Identify gaps in the existing literature
- Avoid undertaking a research project that is already well evidenced

Key steps to successful literature review:
1. Define the question / problem
2. Identify potential literature / evidence from a variety of sources
3. Exclude irrelevant literature
4. Appraise and grade the literature
5. Summarise the literature
6. Draw conclusions, make recommendations
7. Identify gaps in the existing literature where further research will facilitate improved patient and/or healthcare outcomes

Defining the question
Refer to Section 2 of this document.

Identify existing literature from a variety of sources

*Filtered literature*

Filtered literature sources are those where individuals or groups have already undertaken a review of literature. These are often a useful start and should be considered prior to undertaking a comprehensive review of the literature. Systematic Reviews and Evidence-based Practice Guidelines based on systematic reviews are typically the best filtered literature; although consideration needs to be given to the recency of the review. Non-systematic published review articles, narrative reviews or synopses,
Hardcopy or electronic books/book chapters and wiki sites may be subject to bias and should be interpreted carefully when critically appraising a topic. Please see Table 1 for examples of filtered literature.

**Table 1: Filtered literature examples**

<table>
<thead>
<tr>
<th>Examples</th>
<th>Access from:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practice Guidelines</strong></td>
<td>National Institute for Health and Care Excellence (NICE) National Guideline Clearinghouse NHMRC Clinical Practice Guidelines Portal Others: refer CKN clinical guidelines page:</td>
</tr>
<tr>
<td><strong>Systematic reviews and meta-analyses</strong></td>
<td>Cochrane Library Published systematic reviews/meta-analysis</td>
</tr>
<tr>
<td><strong>Point of care &amp; summaries of evidence</strong></td>
<td>BMJ Best Practice ClinicalKey Australia Clinical Pathways DynaMed UpToDate Joanna Briggs Institute database TRIP Psycbite speechBITE OTseeker PEDro PEN</td>
</tr>
</tbody>
</table>

**Unfiltered literature**

Where filtered literature is not available, outdated, or inadequate for purpose, a basic literature search is indicated. Conducting a basic literature search requires familiarity with:

- Advantages and limitations of key databases/resources
- Search terms (including MeSH, synonyms, keywords and phrases)
- How and where to apply Boolean operators (and, or, not, with)
- How and when to define limits

If you are unfamiliar with conducting literature searches, there are a number of courses run by university and Queensland Health libraries. Librarians may also be available to assist with constructing a search.

**How to construct a basic search:**

1. List the main words from your PICOS question.
2. Identify alternatives (synonyms) that may be used for the main words (consider MeSH terms, wildcards, truncation, proximity operators, and/or phrase searching)
3. For each chosen database, group synonyms together using the Boolean operator “OR”
4. Then combine groups of synonyms with the Boolean operator “AND”
5. Apply any limits or exclusions
6. Record search terms, strategies, exclusions and/or limits and outcomes for each database (refer Appendix X: Search outcomes)
7. Identify and record other search methods (e.g., internet search, hand searching key article references, filtered sources of information)
8. Save your searches and also export search outcomes to Endnote
More detailed searches will also consider utilizing other tools, for example:

- Proximity operators (\(/s = \text{same sentence}, /x \text{ with } x = \text{within } x \text{ words of the search term}, \text{Truncation (usually \(*\)})
- Wildcards (usually ?)
- Phrase searching (usually used within "quotation marks")

See Appendix 1: ‘AHRC PICO Research question development and literature review template’ for further information.

**Disregarding irrelevant literature**

Depending on search criteria, rationale, and outcomes, there may be a need to consider a variety of processes to reduce the final number of articles for appraisal. Title, abstract, and or manuscript screening for relevancy to PICOS question are the most commonly applied of these.

‘When screening the literature, consider the following questions:

- Does this study address a clearly focused question?
- Did the study use valid methods to address this question?
- Are the valid results of this study important?
- Are these valid, important results relevant to my patient or population?

If the answer to any of these questions is “no”, you can save yourself the trouble of reading the rest of the study.’

Source: [http://www.cebm.net/critical-appraisal/](http://www.cebm.net/critical-appraisal/)

**Appraising and/or grading literature**

There are a broad variety of checklists (e.g., CONSORT; SQUIRE) that can assist with reviewing the quality (appraising) of a broad variety of study designs (e.g., randomized controlled trials; observational studies, quality improvement activities). These checklists can also function as ‘best practice’ guides for developing study designs. For commonly used checklists, please see Appendix 2: Research design guidelines and checklists.

A variety of resources are available to facilitate development of recommendations and grading the literature. This stage is only required for those undertaking critical appraisal of the literature and for development of evidence-based practice summaries or guidelines.

**Summarising the literature**

Where a large volume of evidence is being appraised, it is highly recommended to collate information using a standard template. Advantages of using MS Word are ease of formatting; however use of MS Excel facilitates ease of sorting for more complex summaries.

For an example of a basic literature review summary template, please see Appendix 3: Basic literature review summary template.

Tables may also be used to provide a tabulated summary of how articles have met checklist criteria; as an example refer to page 57 of the ADA Evidence Analysis Manual: [https://www.andeal.org/files/Docs/2012_Jan_EA_Manual.pdf](https://www.andeal.org/files/Docs/2012_Jan_EA_Manual.pdf)

**Identifying gaps in the literature**

A successful literature review will identify existing gaps or inconsistencies in the literature. This step of the research or QA process is essential in terms of ensuring the project contributes to our understanding of the area of interest (i.e. maximizes human resources by addressing gaps/inconsistencies) and is vital to ensure that projects undertaken are likely to proceed to presentation and publication (i.e., add to the body of literature on the topic).
Key resources / references:

- Appendix 1: AHRC PICOS Research question development and literature review template
- Appendix 2: Research design guidelines and checklists
- Appendix 3: Basic literature review summary template

University and QH librarians may be available to assist with literature search strategies:

- Herston Health Sciences Library: https://www.library.uq.edu.au/locations-hours/herston-health-sciences-library

Endnote software

The use of an Endnote library for managing references to literature you have collected is highly recommended for anyone planning to create or publish documents that require a reference list. This software program allows you to search, identify, and insert references directly into MS Word from your chosen reference library. In-text citations and a reference list / bibliography can be configured to any style you choose (e.g., APA format) at the press of a single button! Endnote reference libraries can be developed either by directly importing references from databases and search engines, manual entry, or a combination of the two. Although PDF documents can also be stored within an Endnote library, this is not recommended within QH due to limitations of IT infrastructure.

For access to the Endnote software and additional support information, please see the EndNote Specialty Guide [Online]. Available: http://tpch.qld.libguides.com/content.php?pid=449979&sid=3687185

4. Methodology

Whilst a variety of methodological hierarchies have been published, it is important to remember there is no single ‘best’ approach. Rather, the selection of the most appropriate methodology should be guided by the QA or research question, the purpose of the study, and any relevant local and/or environmental factors.

Studies can be predominantly qualitative, quantitative, or various combinations of the two (i.e., mixed or multiple methods). Research designs also exist across a number of other continuums. They can be focussed on effectiveness (e.g., does it work in routine clinical practice / health services?), efficacy (highly controlled, ‘cause and effect’ experimental studies), implementation (e.g., what factors affect translation of the intervention into practice?), and/or efficiency (e.g., economic impact: how much benefit at what cost?).

Higgins and Green (2009) define effectiveness as the extent to which an intervention produces an outcome under ordinary day-to-day circumstances; and efficacy as the extent to which an intervention produces a beneficial result under ideal conditions. Implementation research can focus on any aspect of translating health policies, programmes, and practices (i.e., interventions) into health systems. This can include how to introduce potential solutions and/or how to promote their widespread use and sustainability: ‘the intention… is to understand what, why, and how interventions work in “real world” settings and to test approaches (designed to) improve them (Peters et al., 2014, p.731). Economic impact studies purpose to ‘inform decision makers by providing descriptive indicators of the magnitude of a disease or a health problem as a complement to methods of deciding how scarce resources should be
used to improve health’ (WHO, 2009: pp12). Cost-effectiveness analysis or cost-benefit analysis studies may be useful to facilitate allocation of resources and prioritising interventions (WHO 2009).

For further information, please see Appendix 4: Things to consider when planning a study and choosing a study design.

Key resources / references:
- Appendix 4: Things to consider when planning a study and choosing a study design

Further reading:

5. Developing and changing a research protocol
A research protocol is a standardised document that details the plans for conducting a research study, including the aims and purpose of the study as well as specifically detailing the methodology to be applied. Appendix 5 provides a basic research protocol template that may be used to submit research and quality assurance or audit activities to Metro North HRECs for review. Study protocols must contain document identifiers, version numbers, dates and page numbers (using an x of x format) to accommodate amendments.

Further examples of research protocol templates for MNHHS use are located here:
If there are any changes required to a study protocol after HREC approval is granted, an amendment should be submitted to the relevant HREC. For ease of review, protocol changes must be made using the ‘Track Changes’ feature of MS Word. The protocol version number and dates should also be adjusted accordingly. For further guidance, please see the Royal Brisbane and Women’s Hospital (RBWH) HREC Amendment checklist: https://www.health.qld.gov.au/rbwh/docs/amend_checklist.pdf

6. Ethical requirements, governance and consent

An overview of ethics and governance processes for research and quality assurance activities is provided on the Metro North Ethics and Governance internet page (https://www.health.qld.gov.au/metronorth/research/ethics-governance/default.asp); extracts from this site are detailed below. Figure 1 at the end of this section is also helpful to outline ethical requirements, governance and consent processes for research projects.

Ethics approval

Human Research Ethics Committee (HREC) approval is required for all human research conducted within Metro North. There are two HRECs within Metro North for researchers to submit their ethics applications:


There are three types of applications submitted to an HREC, based on the level of risk to the human participants of the research:

- Exempt from ethics review: reviewed by the HREC Chairperson (out of session)
- Low or negligible risk (LNR) research: reviewed by an HREC sub-committee (out of session)
- Standard risk research: full NEAF reviewed by the HREC

Detailed ethics guidelines and templates are provided on the Metro North Ethics Approval page (https://www.health.qld.gov.au/metronorth/research/ethics-governance/hrec-approval/default.asp), including:

- HREC checklists
- Research Protocols
- Participant information and consent forms
- Online forms
- Exemption from HREC review for a quality assurance/audit activity
- Institutional process for ethical review of low or negligible risk research
- Single and multi-centre amendments
- Data archiving, retention and disposal
- Breaches of the code and research misconduct

Metro North is also a participant of the national approach to single ethical review of multi-centre research. Single ethical and scientific review of multi-centre clinical trials can occur via an appropriate NHMRC certified HREC in other jurisdictions and, for other study types, at another certified HREC in Queensland Health. For further information about multi-centre research ethical clearance contact either the RBWH Human Research Ethics Office or the TPCH Research Ethics and Governance Unit: https://www.health.qld.gov.au/metronorth/research/ethics-governance/contact/default.asp

Site authorisation

After obtaining ethics approval from the human research ethics committee (HREC), site specific authorisation must be obtained by submitting a site specific assessment for approval at all facilities where you intend to conduct research.
All site specific assessment (SSA) applications must be submitted on forms generated as part of the NEAF or LNR form on the Online Forms website (part of the HREC application). The owner of the NEAF or LNR application can create SSA forms related to the site (or sites) that the research will be conducted at.

The completed application must be sent to the relevant Research Governance Officer, along with all of the documents approved by the HREC and as indicated on the SSA submission checklist found below. All accompanying documents, such as financial statements, contracts and indemnification forms, must be electronically attached to the SSA in Online Forms, and submitted in hard copy to the Research Governance Officer. An SSA is not valid until ALL paperwork has been submitted. Incomplete application will not be assessed. An SSA approval letter is required before a research study can commence at the site.

The Research Governance Officers are able to help researchers with this process.

**Public Health Act Applications**
The Public Health Act (PHA) 2005 applies to all researchers (internal and external to Queensland Health) who are undertaking research using identifiable or potentially re-identifiable health information where it is not possible (or unethical) to obtain consent to use a patient’s health information for a clearly specified research study. For further information regarding PHA applications, please see: https://www.health.qld.gov.au/ohmr/html/regu/aces_conf_hth_info.asp

In the case of ‘Clinical Audit and Review’ a PHA may not be required; this will require confirmation with the relevant ethical governance officer.

**Post-approval reporting**
While undertaking a research project, researchers have an obligation to both the participants and to the human research ethics committee (HREC) and research governance officers to provide reporting and monitoring.

Post-approval reporting requirements and guidelines are provided on the Metro North Ethics Post-approval reporting page (https://www.health.qld.gov.au/metronorth/research/ethics-governance/post-approval-reporting/default.asp), including:
- Reporting timeframes
- Commencement, annual and final reporting
- Reporting adverse events
- Amendments

**Clinical trial registration**
All clinical trials should be registered with the Australian New Zealand Clinical Trials Registry (ANZCTR): http://www.anzctr.org.au. Registration of non-interventional trials is not compulsory.

For further details regarding ethical requirements and governance, refer to the following resources:
- QH Health and Medical Research Unit: https://www.health.qld.gov.au/ohmr/
Please contact an experienced researcher or the relevant RGO if you need further advice in relation to the appropriate level of ethics and governance for your project (i.e., exemption, low risk, or full NEAF) or if you have any other queries / concerns.
7. Project resources, budgets and grants

All research projects require, as a minimum, documentation of a basic consideration of resources.

Budgets
A basic budget is required to be detailed in the site specific application (SSA). Budgets will usually consider, but may not be limited to:

- Human resources - staffing / personnel
- Equipment
- Consumables
- Other: eg. transport, training, accommodation

These may either be costed or listed as provided ‘in kind’. Human resources are usually costed using the Pay Rates for Queensland Health Staff (http://www.health.qld.gov.au/hrpolicies/wage_rates/default.asp) plus 30% ‘on costs’.

‘On costs’ should consider:

- Sick leave: 3.85%
- Long service leave: 1.75%
- Workcover: 1.20%
- Rec. leave: 8.89%
- Rec. leave loading: 1.56%
- Superannuation: 12.75%
- 30.00%

A detailed study budget template is provided on the Metro North Research and Ethics page here: https://www.health.qld.gov.au/metronorth/research/ethics-governance/site-authorisation/default.asp

Travel and accommodation
Travel and accommodation bookings should routinely be made through the Metro North Travel Service (http://qheps.health.qld.gov.au/metronorth/corporate/travel-services.htm). Reimbursement for staff travel made outside of this process cannot be guaranteed.

Domestic and international travel requirements, policies and procedures are listed on the Metro North Travel Service page. Further information regarding international travel is found on the Travel and Accommodation Information Service QHEPS site (http://qheps.health.qld.gov.au/travel/international-travel.htm).

For further information contact regarding travel and accommodation contact mnts@health.qld.gov.au or phone 3139 6341 or 3139 4952.

Grants
Grant funding is not always required for project success; for some QA and ‘routine practice’ implementation studies additional funding may even be counterproductive at particular stages of the project lifecycle. However, grants often are integral to successful research outcomes and it may be well worth spending time to buy time.

Questions to consider if you are thinking about a grant:
Who: Who should I apply for funding to? Who should I spend money on? Who is eligible for ‘new investigator’? Who can help me develop / review my application? Who would be an appropriate mentor? Who should I approach as co-investigators or partners? Who do I need to sign off or approve my project?
What: What is my research question? What makes the project worth funding? What are the funding criteria? What can I spend the money on?
When: When do I need funds by? When might injection of funding adversely impact my project? When do I need to submit budget updates or progress reports?
Where: Where can I get information about upcoming grants?
Why: Why do I actually need funds? Why do I need to spend time doing a grant application – will I get adequate return on investment?
How: How do I improve my grant application success rate? How do I appropriately tweak my application to improve funder relevancy? How do I spend my money / get reimbursement?

Grant applications vary substantially; successful applicants will consider the above questions and then:
- address all criteria and target requirements
- clearly identify the study aim, method, materials / resources required, and dissemination plans
- demonstrate background, hypotheses and rationale, benefits and relevancy to funders and stakeholders; in lay terms and with supporting key references
- align to key strategic directions statements, policies etc
- demonstrate successful track record and/or capacity to produce outcomes
- highlight successful partnerships and support processes (and mentors if new researcher)
- provide a budget to the specified level of detail
- provide adequate detail whilst remaining succinct

Private practice trust fund (PPTF) and Foundations
PPTF opportunities and application processes are specific to individual Metro North facilities; information is available from facility intranet sites and PPTF officers. The RBWH Foundation (https://www.health.qld.gov.au/rbwh/research/research_foundation.asp) and TPCH Foundation (http://www.tpchfoundation.org.au/) are also potential sources of funding for research projects and equipment.

8. Data collection, entry and evaluation

Data collection, entry and evaluation processes will vary according to the research design (e.g., quantitative vs. qualitative). The following table provides some basic issues to consider in relation to data collection and entry:

| WHO | Who owns the data / can give permission to access?  
|     | Who will collect data?  
|     | Who will enter data?  
|     | Who will have access to data?  
|     | Who will evaluate the data?  |
| WHAT | What data is required (primary, secondary and comparative measures)?  
|     | What are the data definitions?  
|     | What do the abbreviations or codes stand for?  
|     | What evaluative methods are planned for the data?  |
| WHEN | When will training be provided?  
|     | When will templates / datasets / repositories be developed / piloted?  
|     | When will data be collected?  
|     | When will data be entered?  
|     | When will data be cleaned?  
|     | When will data be analysed?  
|     | When will data be cross checked?  |
| WHERE | Where will data be stored?  |
| WHY | Why do I need to collect the data?  |
| HOW | How much data is required?  
|     | How will data be entered (e.g., numerical / coded vs. descriptive)?  
|     | How will data be refined / manipulated?  
|     | How will data be kept secure?  
|     | How will data integrity be maintained?  |
How will the data be disseminated?
How will the data be destroyed?

**Excel Tips**

**Do:**
- Enter variable names in the first row of the spreadsheet
- Keep variable names to 8 or less characters if possible and avoid spaces (use _underscore_)
- Establish definitions and keep on a separate sheet in the same spreadsheet
- Only have one column per variable and one value per cell
- Use numerical (e.g., 0, 1) rather than descriptive if possible
- Identify missing data (if importing into SPSS consider e.g., 999999 for missing data)
- Check and clean data before analysing

**Do not:**
- Merge cells
- Rely on colours for coding
- Forget the password protection password
- Use ‘.’ Or ‘*’ or ‘-‘ for empty cells or missing data
- ‘Sort’ data using excel with any empty columns in the sheet
- ‘cut and paste’ columns or rows unless you want to replace an existing column or row; consider using cut and ‘insert cut’ instead
- Leave data input until after at the end of the study!
- Play with data until it has been checked and cleaned – if you cannot help yourself make a copy if you want to play with the data

**Consider:**
- Using useful view (e.g., Freeze, split, hide) and layout (e.g., print area) functions
- Using minimum / maximum values or drop downs etc to minimise errors
- Using basic descriptive statistics to check for data errors (e.g., AVERAGE, STDEV, counts, graphs etc) or ‘find’ for common errors / typos
- Double entry and use ‘row differences’ or conditional formatting for mismatch verification
- Risks associated with using formulae as an alternative to raw data
- Sheet protection

Data evaluation is beyond the scope of this toolkit; refer to the key resources below

**Key resources / references:**

Quantitative and qualitative data evaluation support is also available from a broad variety of experienced researchers across Metro North HHS.

**Recommended textbooks:**
9. Dissemination of findings

Abstracts
Scientific abstracts require succinct writing and careful attention to abstract-specific guidelines. However, the majority of abstracts follow a fairly consistent format.

For example checklists and examples of abstract writing consider the following:
- EXPLORE abstract checklist, examples and explanations: http://www.consort-statement.org/extensions
- PRISMA abstract checklist for reporting systematic reviews or meta-analysis http://www.prisma-statement.org/Extensions/Abstracts.aspx

Posters
Conference posters can be in electronic or hardcopy format. Careful attention needs to be given to the type of poster required, dimensions, transportation and attachment methods when targeting a specific conference.

Many conferences also support a short presentation and/or accompanying handouts.

Important considerations to ‘sell’ your message:
- Have you clearly defined your key points / take home message?
- Can your poster be ‘scanned’ from 2-3 metres away?
- Are colours / backgrounds / pictures useful or distracting?
- Is your poster uncluttered / do you have adequate ‘white space’?
- Have you considered branding / marketing / how to stand out from the crowd?

Formatting and content:
- Consider poster flow – 2-3 columns portrait; scanning down columns, left to right
- Title across whole poster (120-200 point)
- Subheadings 48 point
- Bullet point main text 36 point
- Use pictures / graphs / flow diagrams etc wherever possible
- Avoid jargon
- Use accompanying handouts to detail complex methodologies / detailed outcomes
- Consider IMRaD format unless otherwise specified
  o Introduction: including background and aims
  o Method: avoid excessive detail
  o Results: including sample and findings; and
  o Discussion: including limitations, conclusions, and implications for practice / translation / further research
- References / acknowledgements 24-28 point
- Consider Arial, Rotis Serif, Meta, Microsoft Sans Serif.


The Metro North Design team may be available to provide assistance with poster design and/or printing: http://qheps.health.qld.gov.au/metronorth/communications/design.htm. If there are reported delays in scheduling print jobs through the above, a number of commercial office supplies companies provide efficient, competitively priced, high quality printing.
Oral presentations
Important considerations to ‘sell’ your message:

• Have you tailored your presentation to the target audience?
• Do you have an ‘attention grabber’ / other ways to engage participants from the start?
• Do you provide a clear justification for why your presentation is important?
• Does your presentation provide a focus your key messages / main take home points?
• Does your presentation content ‘flow’?
• Have you allowed enough time for content delivery and questions?
• Are you prepared for potential questions?

Formatting and content:

• Inclusion of ethics waiver / ethics number if relevant
• Include all co-authors, sponsors / funders, and declaration of conflicts of interest statement
• Avoid distracting / redundant graphics and make use of white space
• Minimum font size 20 point
• Consider Arial, Rotis Serif, Meta, Microsoft Sans Serif.
• Ensure appropriate acknowledgements
• Include key references at end of presentation with (Author, Year) referencing
• Consider footnotes for speaker details (e.g., if busy conference with concurrent sessions)

Manuscripts
The EASE Guidelines for Authors provide an excellent overview of how to develop and refine a research manuscript: http://www.ease.org.uk/sites/default/files/ease_guidelines-2015.pdf

Marketing and communicating key outcomes
Consider how you can market and communicate research outcomes, for example through Metro North Facebook, Twitter, and a broad variety of other communications processes. For further assistance with marketing and communicating successes, contact the Metro North Communication and engagement team: http://qheps.health.qld.gov.au/metronorth/communications/commcontact.htm

Implementation / translation into practice
The following resources provide a good introduction into implementation science and how to translate research into practice (TRIP):

Appendix 1: AHRC PICOS Research question development and literature review template

PICOS divides the research question into the 5 necessary parts that make up a research question and research structure:

P: Population or patient; consider clinical condition, age, care setting, other demographics
I: Intervention, indicator or exposure of interest (prognostic factors for non-interventional questions)
C: Comparator or control
O: Outcome/s measured
S: Setting (may be specified within ‘Population or patient)

**Intervention PICOS:**

Population (or patient) & setting – *eg. > 65 yrs community dwelling outpatients with type 2 diabetes and a ‘non-healing’ neuropathic foot ulcer.*

Intervention, indicator or exposure of interest – *eg. Low frequency ultrasonic debridement performed twice per week for 12 weeks:*

Comparison (or control) – *eg. Sharps debridement performed twice per week for 12 weeks:*

Outcome/s Measured – *eg. Percentage of foot ulcers healed at 12 weeks:*

**PICO – eg. Intervenotional example: In endocrine outpatients with non-healing diabetic foot ulcers (P), does ultrasonic debridement (I) compared to sharps debridement (C) improve healing rates (O)?**

**Non-interventional PICO**

Population (or patient) – *eg. Acute hip fracture patients with surgical intervention*

Exposure of interest – *eg. with malnutrition diagnosis on admission*

Comparison (or control) – *eg. well-nourished on admission*

Outcome/s Measured: – *eg. more likely to have increased mortality at 12 months?*

**PICO – eg. In acute hip fracture patients for surgical intervention (P), does the on admission diagnosis of malnutrition (I/E) compared with adequately nourished (C) affect 12 month mortality (O)?**
Step 1: Define the Question (PICOS)

[Enter your PICO question here]

Step 2: Identify your search terms

<table>
<thead>
<tr>
<th>Key search term</th>
<th>Synonyms (+/- wildcards, truncations, phrases)</th>
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</thead>
<tbody>
<tr>
<td>P:</td>
<td></td>
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<tr>
<td>I:</td>
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<td>C:</td>
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<td>O:</td>
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<td>S:</td>
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</tbody>
</table>

Step 3: Document your Boolean operator application for use in standard search engines

[Enter method for combining search terms using Boolean operators to formulate search strategy]

Step 4: Document exclusions/limits

Limits: [eg. published after 1960, English language, humans only, study type etc]

Step 5: Document your filtered literature resources searched and identified outcomes

<table>
<thead>
<tr>
<th>Resource</th>
<th>Search outcomes:</th>
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<tbody>
<tr>
<td>BMJ</td>
<td>Practice Guidelines:</td>
</tr>
<tr>
<td></td>
<td>Systematic reviews:</td>
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<td>Meta-analyses:</td>
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<tr>
<td></td>
<td>Summaries of evidence:</td>
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<tr>
<td></td>
<td>Research manuscripts:</td>
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<td></td>
<td>Abstracts/case reports:</td>
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<tr>
<td></td>
<td>Non-systematic reviews:</td>
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<tr>
<td></td>
<td>Narrative reviews &amp; synopses:</td>
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<tr>
<td>Evidence Based Medicine</td>
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<tr>
<td>UpToDate</td>
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<tr>
<td>Cochrane Library</td>
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<td>Clinical Evidence</td>
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<td>Other 1</td>
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Step 6: Document your databases searched and identified outcomes

<table>
<thead>
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<th>Database</th>
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<td>Research manuscripts:</td>
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<td>Abstracts/case reports:</td>
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<td>Narrative reviews &amp; synopses:</td>
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<td>Other Database 2</td>
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Step 6: Document other search strategies and identified outcomes

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<td>Meta-analyses:</td>
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<td>Internet search</td>
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Step 7: Limit to final number of articles included for critical appraisal

<table>
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<tr>
<th>Total identified</th>
<th>Excluded from final appraisal</th>
<th>Total number included in critical appraisal</th>
<th>Comments</th>
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<tr>
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## Appendix 2: Research design guidelines and checklists

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<th>Design</th>
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<td>Diagnostic / prognostic studies</td>
<td>STARD TRIPOD</td>
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<td>Profession focussed</td>
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## Appendix 3: Basic literature review summary template

<table>
<thead>
<tr>
<th>Author, Date</th>
<th>Study design and quality</th>
<th>Study Purpose</th>
<th>Population (n, demographics, inclusion/exclusion criteria)</th>
<th>Method/interventions</th>
<th>Key outcomes/findings</th>
<th>Author conclusions</th>
<th>Limitations &amp; biases</th>
<th>Relevancy/applicability</th>
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</table>
Appendix 4: Things to consider when planning a study and choosing a study design

Usefulness / applicability
- Will answering the question benefit stakeholders or substantially contribute to evidence?
- Is the study relevant, useful, and/or applicable
- Has the question already been asked / answered by somebody else, or is it currently under investigation elsewhere (check clinical trial registers, published research protocols, conference programs etc)

Feasibility
- Budget & resources
- Research team skills and capacity
- Participant / stakeholder engagement
- Recruitment barriers and enablers
- Likelihood and impact of change during the course of data collection
- Expected adherence to interventions and outcomes measures
- Expectations of participants, researchers, administrators, and funders

Validity / Rigour
- Clearly identified question and rationale (if hypothesis testing); open approach if hypothesis generating
- Clearly defined population and selection processes
- Likelihood of selection and recruitment bias
- Confounders and exclusions
- Type of intervention;
  - Hypothesis testing vs hypothesis generating?
  - Predominantly exploratory vs explanatory?
  - Highly constrained vs multiple / flexible or pragmatic interventions and outcomes measurement?
    - Efficacy, effectiveness or translation/implementation focused?
    - Qualitative, quantitative, or mixed methods?
- Intervention / exposure / time period adequate to elicit a clinically meaningful effect
- Randomisation, blinding, and/or other measures to reduce interventional or assessment bias
- Ethical considerations and requirements
- Outcomes measures; availability, reliability, impact and cost
- Follow up requirements
- Clearly described data collection and analysis processes
- Fidelity measurement (how closely the intervention was adhered to)
- Researcher worldview (eg pragmatic), interpretive approach, and other potential biases including competing interests / research
- Other limitations

Dissemination
- Rigour required for presentation / reporting / publication
- Will your target be interested in your question/findings
- Publication target requirements
- Targeted processes for complex or multiphase designs
Appendix 5: Research protocol template


[Study title]

Investigative team:
[Insert text]

Sponsor / funder:
[Insert text]

Introduction:
[Insert text]

Aim:
[Insert text]

Method:

Study type / Design:

Subjects / Patients:

Measurements:

Interventions / Procedures:

Endpoints:

Study plan:

Analysis:

Ethical considerations:

Resource requirements:

Supervision:

Dissemination of findings:
[insert text]

References:
1. [insert references ]