

Undertaking Research Master Class

A Study Guide

Capacity building in Indigenous chronic disease primary health care research in rural Australia.
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Introduction

Wardliparingga Aboriginal Research Unit has produced a series of master classes designed to increase the awareness of healthcare practitioners about the use of research to improve healthcare for Aboriginal and Torres Strait Islander peoples. In particular, the master classes are designed to provide participants' with an understanding of how research can help to improve the quality of healthcare and patient safety for Aboriginal and Torres Strait Islander peoples, and in doing so gain a basic understanding of how to:

- develop a research proposal; and
- conduct research ethically.

This study guide is designed to support and facilitate learning by providing an easy reference guide to the information covered in these master classes. In addition, this study guide also includes a number of examples and suggests easily accessible tools and resources which can be accessed free of charge, at a later date.

Chapter One – How to Develop a Research Question

1.1 Introduction

This first chapter will provide a broad overview of what research is and how it can help primary healthcare services to improve the quality and safety of healthcare provided to Aboriginal and Torres Strait Islander peoples. In addition, we explain how to develop a research question and identify whether the solution has already been found.

1.2 How Can Research Help to Improve Healthcare Services?

There are a number of benefits which can result from research, providing it is conducted appropriately and address the needs of Aboriginal and Torres Strait Islander peoples and/or their healthcare services. In particular, research may provide an opportunity to identify solutions and provide answers to questions about how to improve the safety and quality of healthcare services. Recently, research relevant to the provision of primary healthcare services to Aboriginal and Torres Strait Islander populations has been used to:

- assess the burden and determinants of cardiovascular and metabolic risk [1]
- examine the extent to which antenatal emotional wellbeing assessments are undertaken [2],
- identify the reasons why children attend primary healthcare centres [3],
- examine the impacts and outcomes of diabetes care [4]; and
- measure the factors which contribute to continuous quality improvement programs [5].

Depending on the type of research conducted, other opportunities which may arise from undertaking or being involved in research may include [6]:

- testing novel and emerging health interventions and technologies,
- deepening understandings about how a given healthcare service operates,
- affording opportunities for healthcare providers to reflect on and learn from their own practice as well as the practices of others; and
- identifying what does not work, as well as what does.

1.2.1 Some Words of Caution Before We Start

Research can be resource intensive and a costly undertaking, often requiring additional infrastructure, time commitment from healthcare providers as well as other scarce resources. It is therefore important to ensure that any research conducted is of real and practical benefit to your organisation.

It should also be remembered that research does not in and of itself necessarily lead to change for the better. The provision of healthcare services exist within a complex environment and therefore real and practical outcomes do not only depend on identifying opportunities for improvement. Instead the implementation of research findings will be influenced by socioeconomic factors, economic cycles and demographic trends. To add to this complexity, improving the quality and safety of healthcare services will always depend on the relationship between the community, individual patients, available resources as well

as the larger healthcare system [6]. While Chapter Four provides more detail in regards to translating research findings into practices, another primary consideration will also be the current policy context [7].

Finally, in some cases research can involve the implementation of a new intervention which may be funded for the life of the research, but not sustainable post completion. While this may be beneficial in the short-term, healthcare providers and the community may become disenfranchised when the intervention ceases. Careful consideration needs to be given to how expectations about the sustainability of any perceived or real benefit that comes from undertaking in a research project in your healthcare service.

1.3 So what is research?

There is no single definition of research. However, many people would agree that it is primarily about a **systematic process** which is designed to **create knowledge** with a **specific purpose** or aim in mind – although at times this aim or purpose is simply to explore possibilities.

Research is defined as the creation of new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings. This could include synthesis and analysis of previous research to the extent that it leads to new and creative outcomes [8, p. 7].

In our context, we would suggest adding:

Research is defined as the creation of new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings. This could include synthesis and analysis of previous research to the extent that it leads to new and creative outcomes [8, p. 7]**in order to improve Aboriginal and Torres Strait Islander health outcomes.**

While there are always exceptions to the rule, the majority of studies undertaken will include the following separate but interlinking steps (Figure 1.1).



Figure 1.1: Steps which are usually followed when undertaking a research study

We would suggested an important seventh step:



Figure 1.2: Steps which should be followed when undertaking a research study

Broadly speaking there are two types of research methods - **quantitative** and **qualitative**. Both have their own specific purpose, assumptions and processes.

1.3.1 Quantitative Research

Quantitative methods are primarily used to establish or answer questions that relate to “when”, “where”, “how many”, “how often” and “how much”. The following example questions and a hypothesis, lend themselves to quantitative methodologies:

- **How many people in my healthcare service have been diagnosed with hypertension?**

- **Does the new transport service improve the number of people who attend appointments at our healthcare service?**
- **Aboriginal and Torres Strait Islander people over the age of 30 are less likely to have completed an Adult Health Check in the last 12 months.**

Quantitative methods aim to gather data that are usually numerical or statistical, and that can be counted in order to generalise findings across a group or groups of people represented by a sample of the population. Quantitative research generally follows a linear path beginning with a testable question or hypothesis and ending with an answer, or the rejection or acceptance of a hypothesis (Figure 1.3).



Figure 1.3: Quantitative study design

1.3.2 Qualitative Research

Qualitative methods are used to answer research questions that pertain to understanding people, their experiences, and the contexts in which experiences occur. The following example question, which was first introduced in the section above, lends itself to qualitative methodologies:

- **How can we improve the care provided to Aboriginal and Torres Strait Islander people in my community?**

Qualitative research methods aim to gather data that are non-numerical and embedded in their context. This type of research is usually less structured and may not be linear. While a defined aim or broad question should be identified at the start of the study, qualitative researchers will often use the findings from the initial data collection to guide the specific direction of the questions they ask later in the data collection. Investigation of the qualitative data is often used to reveal themes and patterns, which lead to insights and explanations, which then can assist in understanding the how and/or why of a particular phenomenon (Figure 1.4).

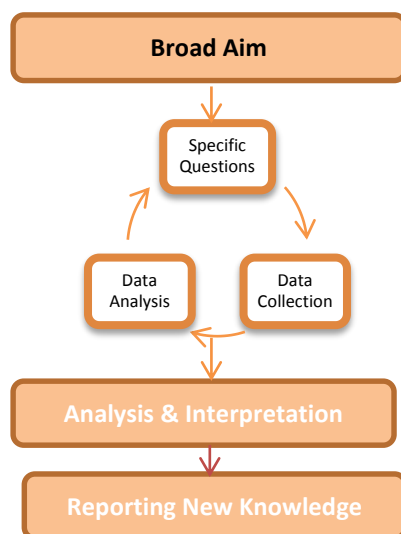


Figure 1.4: Qualitative study design

1.4 How can I develop my own research question?

Motivation for research in healthcare practice often comes from our own experience of providing clinical care, not infrequently because of our frustration with the difficulty of providing what we think would be the best possible healthcare. Our motivation gives us energy for research. However, our first step should be to examine our motivations carefully, as they will shape our future research. This includes considering why we want to do research on this issue at this time and in this place [9, p. 25].

As long as it is designed and constructed with specific purposes in mind, research can be used to improve the quality and safety of healthcare services for Aboriginal and Torres Strait Islander peoples. For example, research can be used to:

- **To answer a specific question**

For example:

How many Aboriginal and Torres Strait Islander peoples in my healthcare service have been diagnosed with hypertension?

- **To explore a topic of interest**

For example:

How can we improve access to care for Aboriginal and Torres Strait Islander people in my community?

- **To understand whether a new intervention is beneficial**

For example:

Is the new transport system improving the number of people who attend appointments at our healthcare service?

- **To test out a hypothesis or assumption**

For example:

Aboriginal and Torres Strait Islander people over the age of 30 are less likely to have completed an Adult Health Check compared to Aboriginal and Torres Strait Islander people ≤ 30 years of age, in the last 12 months.

Step One: Identify who should determine the aim of the study and what specific question or hypothesis should be addressed? For many years the questions that researchers have posed have been privileged above the particular needs and wishes of the healthcare organisations and the communities they serve. More recently it has been acknowledged that to ensure research outcomes are practical and applicable healthcare practitioners and Aboriginal and Torres Strait Islander peoples should together drive the research agenda.

Step Two: Identify the aim of the study. Start out by ensuring that a broad aim or objective for the research is identified. Consider what problem requires a solution, or what broad issue needs to be addressed.

Step Three: Identify the question or hypothesis. Once a broad aim has been agreed upon, a question or hypothesis should then be developed.

1.4.1 Components of a Research Question

Research questions need to contain specific information. To make this easier it may be helpful to dissect the question into different parts of components.

Research questions which aim to **compare the effectiveness of one procedure or intervention with another** are generally quantitative in nature and will comprise of the following four important components [10, 11].

1. **Population of interest** – the individuals you wish to include in the study including their important characteristics such as age, sex and/or disease type.
2. **Intervention or treatment** – can be a treatment, procedure, diagnostic test and/or a risk factor.
3. **Control or comparator** – your comparison intervention treatment, placebo or standard care.
4. **Outcome** – difference between the intervention/treatment and the control. It is important to remember that this must be quantifiable, specific, valid, reproducible and appropriate.

Example of a research question with clearly defined terms and measures:

Is an exercise program together with standard dietary advice more effective for reducing levels of obesity for adult Aboriginal and Torres Strait Islander people, in comparison to standard dietary advice alone?

1. **Population of interest:** Adult Aboriginal and Torres Strait Islander people. Adult is defined as between > 17 and < 55.
2. **Intervention or treatment:** Exercise program with dietary advice. Exercise program comprises of a 1 hour supervised exercise program three times per week.
3. **Control or comparator:** Dietary advice. Dietary advice comprises of a once only, one hour session with a dietician. This is considered to be standard care.
4. **Outcome:** Obesity which could be measured through BMI. Obesity is measured at baseline and then again 6 months after commencement of exercise program.

Research questions which aim to **identify or quantify what is currently occurring** are also generally quantitative in nature and will usually have the following three important components.

1. **Population of interest** – the individuals you wish to focus on in this particular study including important characteristics such as age, sex and/or disease type.
2. **Factor of interest** – such as a treatment, a procedure, a diagnosis, a test and/or any other quantifiable factor of interest.
3. **Outcome** – the measurement of the factor of interest. Must be quantifiable, specific, valid, reproducible and appropriate.

Example of a research question with clearly defined terms and measures:

How many people attending the healthcare service have been diagnosed with hypertension?

1. **Population of interest:** people attending [name of healthcare service]
2. **Factor of Interest:** Hypertension is defined as an average ambulatory blood pressure reading exceeding the standard values for daytime BP as defined by the Heart Foundation.
3. **Outcome:** BP measure recorded in the medical records.

Research questions which aim to better **understand how or why things happen** are generally qualitative in nature and will usually consist of the following three important components.

1. **Population of interest** – the individuals to be included within the study including important characteristics such as age, sex and/or disease type.
2. **Phenomena of interest** – the experience or phenomenon that you are interested in understanding.

3. **Context** – factors such as geographic location, cultural factors, and details about the setting.

Example of a research question with clearly defined terms and measures:

How do Aboriginal and Torres Strait Islander people in the community believe that access to care can be improved?

5. **Population of interest:** Aboriginal and Torres Strait Islander people
6. **Phenomena of interest:** Perceptions of the population of interest about how access to care could be improved.
7. **Context:** The community encompasses all people who reside in [name of community] as at 1st December 2014.

1.4.2 A Realistic Research Question

A research question also needs to be realistic in its design. At a minimum you will need to consider the following four criteria [10], details of which are expanded in other chapters of this manual.

1. **Novel** – One of the primary questions you need to ask yourself is has the answer already been identified. If this is the case you may not need to repeat the exercise. How to find out if someone else has already found the answer to your question is covered in **Chapter Two** of this manual,
2. **Ethical** – Ensuring your research meets ethical standards at all times is essential. An overview of these responsibilities is provided in **Chapter Three** of this manual.
3. **Feasible** – Feasibility speaks to whether you have or are able to find the resources to undertake your research. How to apply for grant funding is covered in **Chapter Four**.
4. **Relevant** – Making sure that your research makes a difference to healthcare practice is an important part of the research process. **Chapter Five** covers the translation of findings into practice.

1.5 Key Messages from Chapter One

- 1) Research has been defined as the creation of new knowledge and/or the use of existing knowledge in a new and creative way so as to generate new concepts, methodologies and understandings.
- 2) There are a number of benefits that can result from research providing it focuses on the specific needs of Aboriginal and Torres Strait Islander peoples and/or their healthcare services.
- 3) Undertaking research can be resource intensive and a costly undertaking.
- 4) The following four basic steps should be addressed prior to beginning any study:
 - a. **Step One:** Identify who should determine the aim of the study and what specific question or hypothesis should be addressed.
 - b. **Step Two:** Clearly define the aim of the study.
 - c. **Step Three:** Articulate the question or hypothesis.
- 5) There are a number of essential components to a research question. What components are necessary will depend on the aim of the research.
- 6) Research questions must also be realistic – novel, ethical, feasible and relevant.

1.6 Resources Relating to Chapter One

1.6.1 Developing a Research Question

How to develop a health research question.

http://www.phcris.org.au/phcred/research_bites/research_bites_3.pdf

Formulating a research question – an article outlining what you should consider when designing research.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3140151/#CIT3>

Identifying clinical research questions that fit healthcare practice settings:

https://nursing.duke.edu/sites/default/files/centers/_reduced_1a_findingclinicalquestions_01-11-2011_website1.pdf

Chapter Two – Has the Question Already Been Answered?

Once the aim of the research as well as the specific question/s or hypotheses has been clearly defined, the next step is to see if an answer already exists. There may not necessarily be a need to undertake your own research if others have already completed the work for you. This chapter focuses on conducting a targeted literature search and identifying whether the literature you find can be trusted.

2.1 Types of Literature You May Find Helpful

You don't have to only rely on journal articles or research reports to inform your question. There is a plethora of different types of literature which could potentially contribute to answering your question or testing your hypothesis (Figure 5).

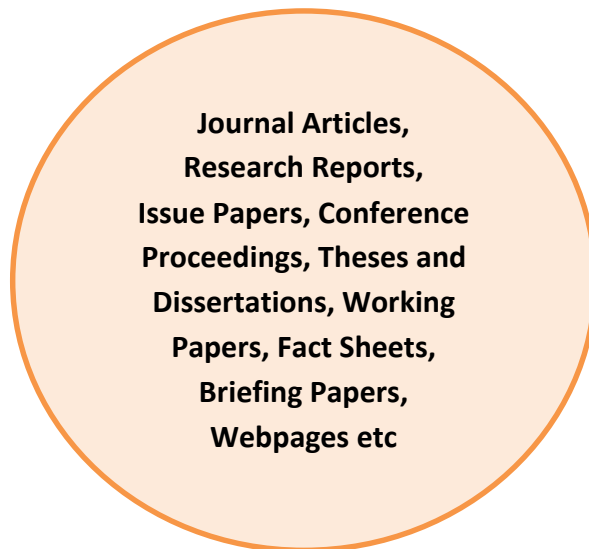


Figure 2.1: Examples of scientific literature

However, not all of these types of literature are considered to be of equal quality. Instead there is a hierarchy of evidence (Figure 2.1).



Figure 2.2: The hierarchy of literature

Many people distinguish between **peer reviewed** and **grey literature**. Peer reviewed literature involves a review by the researcher's peers prior to publishing. Be careful. Just because literature is published in a journal does not mean it is peer reviewed. Grey literature, on the other hand, has not been peer reviewed and is often published on websites, in newsletters and/or as a study report.

2.2 Using a Publication Database

Publication databases are a great tool for finding peer reviewed and in some cases grey literature. They are helpful because they allow you to search and download articles from a number of journals at the same time.

While databases are particularly helpful as an online tool for identifying literature that may be useful, there are some downsides. First, there are many different types of databases and it is sometimes difficult to work out which one you should use. Second, in many cases you need to pay a subscription fee to use a database. However, if you haven't subscribed to a database and don't have easy access to a research librarian, we suggest you may like to try some of the database which don't require a subscription for a basic level of use (Table 2.1).

Table 2.1: Databases which provide access to some free text literature

Free Publication Databases	Details	Link
PubMed	Over 22 million primarily peer-reviewed biomedical citations. Some with links to free full-text.	http://www.ncbi.nlm.nih.gov/pubmed
Cochrane Database of Systematic Reviews	Peer-reviewed free full-text systematic reviews of healthcare, medical and public health interventions that have been prepared and supervised by a Cochrane Review Group.	http://onlinelibrary.wiley.com/cochranelibrary/search/
Google Scholar	Peer-reviewed and grey literature including journal articles, reports, theses and opinion papers. Some include links to free full-text.	http://scholar.google.com.au/
Google	Primarily used to search for grey literature including websites of interest and links to reports and opinion papers.	http://www.google.com.au/advanced_search
MedNar	Primarily used to search for grey literature including commercial databases, medical societies, National Institute of Health and government resources and patents.	http://mednar.com/mednar/desktop/en/green/search.html
World Health Organisation	Contains links to World Health Organization projects, initiatives, activities, information, and contacts organised by health and development topics.	http://www.who.int/topics/en/

Unfortunately, just because you can access these databases and search their content doesn't necessarily mean you will be able to see the full-text of every article, report or other types of literature for free. In some cases you may only be able to see the title, authors and a short abstract or summary of the article before being directed to a fee for service webpage. However, a number of articles are provided free of charge and in other cases

short summaries or abstracts of the article can be helpful. If you are really interested in reading the full text and it is not available, try emailing one of the authors as they will generally be happy to send out a full-text of the article upon request.

2.3 Building Your Search

Rather than not finding enough literature, you may be faced with too much. The way to manage the potentially thousands of articles which could pertain to your question or hypothesis is to develop a search strategy which focuses what your search looks for. To do this you need to:

Step One: Identify the key concepts in your question or hypothesis.

Step Two: Identify any alternative terms which could exist for these concepts.

Step Three: Decide whether you want to restrict your search in any way. For example, you could restrict your search to:

- a certain population or group,
- a specific age group; and/or
- a particular type of literature (e.g. journal article or book).

You may find it helps to clarify your thinking if you use a **logic grid**, in which you group related concepts or synonyms.

Examples of a logic grid for a research question:

1. How prevalent is rheumatic heart disease in Aboriginal and Torres Strait Islander populations?

As there are three distinct concepts involved in this search (underlined above) we will use three columns.

Label each column with the concept and then list all of the terms which could be used to describe the concept.

Measure	Condition	Population
Prevalence	Rheumatic heart disease	Aboriginal
Rate	RHD	Torres Strait Islander
Incidence		Indigenous Australian
Risk		

2. How acceptable are outreach visits to Aboriginal and Torres Strait Islander peoples living with chronic disease?

As there are three distinct concepts involved in this search (underlined above) so we will use three columns.

Label each column with each concept and then list all of the terms which could be used to describe the concept.

Intervention	Population	Condition
Out-reach	Aboriginal	Chronic disease
Out reach	Torres Strait Islander	Cardiovascular disease
Home visits	Indigenous Australian	Diabetes
		Respiratory disease
		Depression

3. Aboriginal and Torres Strait Islander peoples who live in urban locations are less likely to have an adult health check than those in rural or remote areas.

As there are three distinct concepts involved in this search (underlined above) we will use three columns.

Label each column with each concept and then list all of the terms which could be used to describe the concept.

1. Population	2. Location	3. Intervention
Aboriginal	Rural	adult health check
Torres Strait Islander	remote	adult health screen
Indigenous Australian	urban	MBS Item number
	metropolitan	

2.4 Searching in Databases

Unfortunately, not all databases are the same. Each has set up its own tools and rules for searching. Therefore, before starting your search it is a good idea to have a look at the database's help page (Table 2.2).

Table 2.2: Help pages for each of the previously suggested databases.

Free Publication Databases	Link to Online Help
PubMed	http://www.ncbi.nlm.nih.gov/books/NBK3827/
Cochrane Database of Systematic Reviews	http://olabout.wiley.com/WileyCDA/Section/id-390244.html
Google Scholar	http://www.google.com/intl/en/scholar/help.html#overview
Google	http://searchengineland.com/guide/how-to-use-google-to-search
MedNar	http://mednar.com/mednar/desktop/en/green/help.html

2.5 Can I Trust the Literature?

As previously mentioned, just because something is published doesn't necessarily mean that the information it contains is always reliable or trustworthy. It is therefore important to consider the quality of the literature prior to relying on the presented findings. There are a number of factors that you should consider depending on the type of literature you have found.

2.5.1 Quantitative Literature

As discussed in section 1.3.1, the purpose of quantitative studies is to quantify or measure a phenomena of interest or to identify cause and effect relationships. (i.e. does smoking lead to lung cancer). While there are many different types of quantitative studies, not all are considered to be equal. Instead, there is a hierarchy of evidence (Figure 2.3).

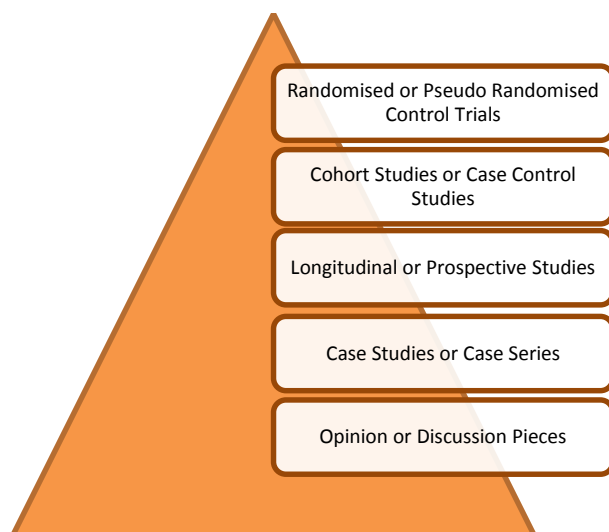


Figure 2.3: The Hierarchy of Evidence

While randomised control trials are considered to be of the highest standard, it is important to note that randomised control trials may not always be appropriate either if the research question or the research context doesn't lend itself to this type of research. Therefore, studies using other types of quantitative methods should not be ignored.

There is, however, more to assessing the quality of evidence than just identifying the type of study that was undertaken. You may also need to consider the following questions when deciding if you will trust the evidence presented.

- Was the study based on a random or pseudo-random sample?
- Were the criteria for inclusion in the sample clearly defined?
- Were confounding factors identified and strategies to deal with them stated?
- Were outcomes assessed using objective criteria?
- If comparisons were made, was there sufficient description of the groups?
- Was follow up carried out over a sufficient time period?

2.5.2 Qualitative Literature

As discussed in section 1.3.2, the purpose of qualitative studies is to describe and/or deepen the understanding of a phenomena (i.e. How do Aboriginal and Torres Strait Islander people assess well-being?). There are a number of ways in which the quality of qualitative research can be assessed. One way is to consider the validity and the relevancy of the study.

Validity: Validity refers to how legitimate or valid the findings are. The types of questions that should be considered when assessing validity are:

- Have the findings been corroborated either through the use of multiple data collection methods or data sources? For example, did observations support the findings from key informant interviews and were a range of different participant perspectives considered?
- Have the findings been reviewed by the participants to establish whether they reflect the participants' views?
- Has the method of data collection, analysis and interpretation been clearly explained?
- Did the researcher/s reflect on how their own views and values may have influenced data collection, analysis and interpretation?

Relevance: Relevance refers to the extent to which the study findings can be applied to situations beyond the immediate study. The types of questions that could be considered when assessing relevance are:

- How well does the study add to, or increase the confidence of current knowledge about the topic?
- Do you think that the findings could be applied to contexts or situations beyond what was considered in the original study?

2.5.3 Systematic Reviews

It has been suggested that in order for health practitioners to keep abreast of the relevant literature they would need to read on average about 17 – 20 articles every day. Therefore, using systematic reviews which apply rigorous methods to identifying, assessing and interpreting literature related to a specific topic or question makes a lot of sense. However, similar to quantitative and qualitative literature, it is important to assess the quality of the systematic review before you decide to apply their findings.

You may wish to start by asking the following questions [12].

- Was there evidence that the systematic review was designed prior to beginning the review? (i.e. Was the protocol or methodology published prior to commencing?)
- Was the search comprehensive? (i.e. Do you think they include all of the possible terms in the search)
- Did two independent reviewers select and extract the data and then compare and discuss any discrepancies?
- Was a list of studies and characteristics for each provided in the literature? (i.e. type of participants, any interventions and outcomes for each study)
- Was the scientific quality of the included studies assessed and documented? (i.e. assessed for quality in a similar way as discussed in sections 2.5.1 and 2.5.2 above)
- Were the methods used to combine the extracted findings appropriate? (i.e. Were the studies combined in a sensible way?)
- Was the possibility of a conflict of interest acknowledged? (i.e. Did the authors state any support received or alternatively clearly identify that there was no conflict of interest?)

2.5.4 Grey Literature

While it is a little more difficult to assess the quality of grey literature, particularly if presented online by an unknown or obscure source [13], there are still some questions that can be asked to identify whether you can rely on the information provided.

- Whose website is it? (i.e. You may be more inclined to trust information contained on the World Health Organization website than information provided by a private for profit company.)
- Who has authored the information? (i.e. You may be more inclined to trust the information if it is authored by an expert in that particular field.)
- When was it produced? (i.e. You may be more inclined to trust the information if it was produced recently rather than perhaps 10 or 20 years ago.)
- Why was it produced? (i.e. You may be more inclined to trust the information if it was specifically produced for use by health practitioners rather than information for general consumption.)

2.6 Key Messages from Chapter Two

- 1) Reviewing the literature will help you to find out if your research question has already been answered.
- 2) In addition to journal articles you may also consider reviewing Research Reports, Issue Papers, Conference Proceedings, Theses and Dissertations, Working Papers, Fact Sheets, Briefing Papers and Webpages.
- 3) Just because something is published doesn't necessarily mean that the information it contains is always reliable or trustworthy. Therefore, a careful analysis of not only the content but also the source should be undertaken before the contents are utilised.

2.7 Resources Relating to Chapter Two

2.7.1 Searching Databases

Tutorials on how to search PubMed can be found at:

<https://www.nlm.nih.gov/bsd/disted/pubmed.html>

Primary Healthcare Research Information Service provides an overview and guide to aid searching for grey literature: http://www.phcris.org.au/guides/grey_literature.php

Some detailed information about searching PubMed and tips on constructing searches specific to Aboriginal Health can be found on a University of Adelaide webpage:

<http://libguides.adelaide.edu.au/content.php?pid=279714&sid=2337683>

Lowitja provides predefined search terms and a filter which focuses on Aboriginal and Torres Strait healthcare research in PubMed: <http://www.lowitja.org.au/litsearch>

Primary healthcare Research Information Service provides predefined search terms and filters which focus on primary healthcare research in PubMed:

<http://www.phcris.org.au/phcsearchfilter/index.php?page=phcSearchFilter>

For general information about matters relating to the health of Aboriginal and Torres Strait Islander peoples, including alerts about research literature and reports, tools, resources and funding opportunities try:

<http://www.healthinfonet.ecu.edu.au/?gclid=Cl6GutX84rgCFUhapQodB2YALQ>

For general information about primary healthcare research and to receive regular alerts about completed studies, upcoming research funding opportunities as well as new resources and research tools for research try:

<http://www.phcris.org.au/index.php?page=home>

2.7.2 How to Assess the Quality of the Literature

This YOU TUBE clip provides a basic five minute overview on searching databases:

<http://www.youtube.com/watch?v=Estp65h1nVE#action=share>

More information from the British Medical Journal on how to read and evaluate systematic literature reviews as well as a range of both quantitative and qualitative papers: <http://www.bmj.com/about-bmj/resources-readers/publications/how-read-paper>

A guide to assessing online information:

<http://libguides.hsl.washington.edu/content.php?pid=265195&sid=2189815>

Maureen Bell is a senior research librarian at the University of Adelaide. Her web pages provide advice and links to tools for searching and evaluating public health literature. The link below specifically focuses on evaluating evidence. However the tabs at the top of the page also provide links to help you search for literature and find relevant public health organisation sites:

<http://libguides.adelaide.edu.au/content.php?pid=279714&sid=2828585>

Chapter Three – Ethical Research Practice

If you can't find a satisfactory and reliable answer within the peer reviewed or grey literature, you may wish to think about answering the question yourself. One of the first considerations must be designing a study which meets all ethical obligations associated with undertaking research. This chapter explores some important values that are important for all researchers to consider. The chapter also provides some practical information about completing an ethics application.

3.1 Ethical Values and Standards

Rather than one set of ethical values, research involving Aboriginal and Torres Strait Islander peoples needs to consider a range of issues which could be thought of as a hierarchy (Figure 3.1).



Figure 3.1: Hierarchy of ethical considerations when conducting research

3.1.1 The National Health and Medical Research Council

At a minimum, the National Health and Medical Research Council (NHMRC) has developed the '*National Statement for Ethical Conduct in Human Research*' [14] which includes a set of core values which must be considered and addressed **when conducting all research** involving human participants (Table 3.1).

Table 3.1: National Statement for Ethical Conduct in Human Research [14, pp. 12-13]

Research Merit and Integrity

This value includes ensuring the research methods are appropriate, are based on a thorough study of the current literature, and designed to ensure respect for the participants. Research should also be conducted by appropriate qualified and experienced researchers and use facilities and resources appropriate for the research. Importantly, researchers must be committed to searching for knowledge and understanding, following recognised principles, conducting research honestly and disseminating and communicating results

Justice

This value includes ensuring the inclusion of participants, the process of recruiting and the distribution of benefits is fair. In addition, there should not be an unfair burden on participants.

Beneficence

This value includes ensuring the benefit of the research justify the risks of harm to participants and where there is no benefit, the risks to the participants should be lower than would be ethically acceptable. In addition, researchers are responsible for designing the study to minimise harm, telling participants about both the benefits and risks and ensuring the welfare of participants.

Respect

This value includes respect for human beings for their intrinsic value and respect for the individuals' right to confidentiality and privacy.

3.1.2 Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research

The 'Values and Ethics: Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research' [15] and the companion document 'Keeping research on track. A Guide for Aboriginal and Torres Strait Islander peoples about health research ethics' [16] provide the next important level in the hierarchy of ethical values and standards. These two documents, which were developed in collaboration with Aboriginal and Torres Strait Islander communities, identify six core values which Aboriginal and Torres Strait Islander societies see as essential for conducting research involving Aboriginal and Torres Strait Islander peoples (Figure 3.2).



Figure 3.2: Keeping Research on Track [16, p. 8]

These values are not separate to, but rather inform the way in which the NHMRC values should be implemented (Table 4).

Table 3.2: Keeping research on track. [16, pp. 8-9]

<p>Spirit and Integrity</p> <p>This is the most important value that joins all our Aboriginal and Torres Strait Islander peoples' values together. The first part, Spirit, is about the on-going connection (continuity) between our past, current and future generations. The second part, Integrity, is about the respectful and honourable behaviours that hold Aboriginal and Torres Strait Islander values and cultures together.</p>
<p>Reciprocity</p> <p>Our way of shared responsibility and obligation is based on our diverse kinship networks. This process in our communities keeps our ways of living and family relationships strong. These responsibilities also extend to the care of the land, animals and country and involve sharing benefits from the air, land and sea, redistribution of income, and sharing food and housing.</p>
<p>Respect</p> <p>Respect for each other's dignity and individual ways of living is the basis of how Aboriginal and Torres Strait Islander peoples live. Within our cultures, respect strengthens dignity, and dignity strengthens respect. A respectful relationship encourages trust and co-operation. Strong culture is built on respect and trust, and a strong culture encourages dignity and recognition, and provides a caring and sharing environment.</p>
<p>Equality</p> <p>Aboriginal and Torres Strait Islander peoples recognise the equal value of all individuals. One of the ways that this is shown is in our commitment to fairness and justice. Equality affirms and recognises Aboriginal and Torres Strait Islander peoples' right to be different.</p>
<p>Survival and protection</p> <p>We continue to protect our Aboriginal and Torres Strait Islander cultures, languages and identity. Recognition of our shared cultural identity, which is based on our shared values, is a significant strength.</p>
<p>Responsibility</p> <p>All Aboriginal and Torres Strait Islander communities recognise the same most important (core) responsibilities. These responsibilities involve country, kinship bonds, caring for others, and the maintenance of cultural and spiritual awareness. The main responsibility is to do no harm to any person, or any place. Sometimes these responsibilities may be shared so that others may also be held accountable.</p>

3.1.3 State, Regional and/or Local Level Guidelines

There are also values and guidelines developed at state, regional and/or local levels. You could check with the state peak Aboriginal Community Controlled Organisation or the National Aboriginal Community Controlled Organisation to find out what could apply in your particular context. For example, in response to a call from Aboriginal communities and

researchers within South Australia, Wardliparingga Aboriginal Research Unit has developed a set of ten draft principles based on national and international best practice frameworks and guidelines for conducting research with Indigenous peoples (Table 3.3). While still in the development stage, these principles are intended to build upon, rather than supersede established values and principles such as those developed by the NHMRC.

Table 3.3: Draft Principles developed by Wardliparingga Aboriginal Research Unit

Principle 1. PRIORITIES:

Research should be conducted on priorities arising from and endorsed by Aboriginal and Torres Strait Islander communities to enhance acceptability, relevance and accountability.

Formal engagement with both communities and Aboriginal and Torres Strait Islander service providers must happen at the development phase of any research. Communities should be involved in prioritising, designing, implementing and evaluating research [17]. It may be necessary to redesign methodologies to ensure that they are focused on establishing and building relationships. Moreover, timeframes often underestimate what is required for thorough engagement and consideration by communities [18, 19].

Principle 2. INVOLVEMENT:

The involvement of Aboriginal and Torres Strait Islander people and organisations is essential in developing, implementing and translating research.

Formal research agreements need to be developed based on the achievement of equivalent intercultural partnerships [20-23]. Consultation with authoritative local community members and organisations (e.g. Elders, Aboriginal Community Controlled Health Services and Community Councils) are critical to the engagement process [17].

There exists significant diversity within and across Aboriginal and Torres Strait Islander communities and generalisations should be avoided. Prospective researchers have a responsibility to be informed of, and adhere to, local Aboriginal and Torres Strait Islander cultural protocols. Before commencement of any research an Aboriginal and Torres Strait Islander reference group should be established to address community priorities and provide guidance through each stage of the research process to completion. The reference group should be comprised of individuals with the authority and capacity to consider issues such as community demographics, cultural protocols and gender balance [17].

Aboriginal and Torres Strait Islander communities and services can suspend or withdraw from any research if there is a breach of agreement or dissatisfaction with the implementation and conduct of the project [24].

Principle 3. PARTNERSHIP:

Research can only be successful if trust and intercultural competence is built by working in mutual partnership.

The skills, knowledge, wisdom and capacity within Aboriginal and Torres Strait Islander communities are important resources that can be used to develop, implement and learn from research. In addition, there exist many organisations, both Aboriginal and Torres Strait Islander as well as non-Indigenous that can support the development and

translation of research. Existing skills and capabilities should be acknowledged, respected and shared by developing partnerships with individuals and local communities [17, 25-27]. A key focus of any research should involve discussion and development of such partnerships. The balance of power in decision-making should reside with Aboriginal and Torres Strait Islander people, for whom the research is proposed to be of benefit.

Researchers should consider employing Aboriginal and Torres Strait Islander community members on the project, and factor these costs into research budgets [22, 28, 29]. Working in intercultural partnerships will increase the ability of non-Indigenous researchers to understand and learn from Aboriginal and Torres Strait Islander knowledge systems. Partnerships can be formed with cultural mentors and Aboriginal and Torres Strait researchers [17].

All individual and community contributions to the processes that guide and ensure the delivery of the research must be acknowledged and recognised in publications [17, 20, 22, 26]. Where Aboriginal and Torres Strait Islander community members contribute to the research (not as employees), a fee for their work should be negotiated between the parties [18].

Principle: 4. COMMUNICATION:

Communication must be culturally and community relevant and involve a willingness to listen and learn from host communities

Respecting Aboriginal and Torres Strait Islander's time and space is a critical element for any research to ensure its success [20, 26, 30]. Individuals and communities may require additional time to consider aspects of research and to ensure protocols are not breached before agreement is reached [20]. It is essential to understand that Aboriginal and Torres Strait Islander communication styles differ significantly from those of non-Indigenous people. Therefore, time will need to be allocated within projects to cater for Aboriginal and Torres Strait Islander decision making processes [31]. Communicating any proposed research should consider the audience to be engaged, and ensure that information is presented to communities using appropriate language - not in research or corporate jargon [31].

It is important to explain and document all aspects of the research including the use of equipment and tools [17]. For many Aboriginal and Torres Strait Islander communities English is not their first or second language. Researchers may therefore need to employ Aboriginal and Torres Strait Islander interpreters [31].

Aboriginal community priorities may differ significantly from that of the researcher for cultural and community reasons: these may include sorry business or cultural obligations and events. These factors need to be incorporated into project timelines, and be respected by the researcher [20].

Principle 5. KNOWLEDGE TRANSLATION AND EXCHANGE:

Knowledge translation and exchange must be integrated into the development and conduct of all elements of the research process to maximise impact on policy and practice.

The need to translate research findings into policy and practice is not a new concept [32]. Policy and practice based on the best available evidence is now widely recognised and supported [33]. Knowledge translation is highlighted in the NHMRC principles of reciprocity and benefit to the Aboriginal and Torres Strait Islander community [23, 34]. Researchers engaging with communities need to have concrete ideas of how the findings will lead to improvements in the health and social and emotional wellbeing of their people [35]. Therefore, it is important to identify decision makers and leaders who have the interest and ability to implement any such research findings. [36] With this in mind policy makers, community members and organisations should be involved in the entire research cycle [33]. Identified strategies to the implementation of findings must be communicated back to communities as a vital part to knowledge exchange. If these standards are followed communities will be true partners in integrating research findings and knowledge in policy and practice [29].

Principle 6. OWNERSHIP:

Research should acknowledge, respect, and protect Aboriginal and Torres Strait Islander intellectual property rights and ensure transparent negotiation of IP use and benefit sharing.

Means of respecting and protecting Aboriginal and Torres Strait Islander intellectual property should be negotiated at the commencement of the research [20, 21] including established mechanisms for reporting on ethical aspects of the project, compliance with NHMRC Values and Ethics Guidelines [34] and the use and benefits of any materials or knowledge used or created during the conduct or as a consequence of the work. In addition, researchers must be aware of the potential that they may not be able to share all of the information provided to them with the public, in order preserve cultural integrity or important cultural protocols. These matters should be negotiated and agreed on prior to the commencement of research.

Principle 7. GOVERNANCE:

Research must ensure the respectful and culturally appropriate management of all biological research materials.

Although biological research can contribute significantly to health improvements for Aboriginal and Torres Strait Islander communities, it is a sensitive issue for many individuals and organisations [27, 37]. The collection, handling, storage, use, destruction and repatriation of any samples taken during the course of research should form a critical part of the informed consent process, and negotiations with communities and their representative services/governance committees [38, 39]. It is only through transparent negotiations that clarity on appropriate handling requirements, and necessary governance arrangements can be established.

Principle 8. RESPECT:

Researchers must demonstrate respect for Aboriginal and Torres Strait Islander knowledge systems and their custodians.

Aboriginal and Torres Strait Islander people have maintained and protected their cultural knowledge, systems and practices for many thousands of years. In the past, researchers have failed to honour and respect Aboriginal and Torres Strait Islander knowledge, cultural expressions and community systems [20, 22]. Aboriginal and Torres Strait Islander communities will always seek to protect private cultural knowledge and practices [20]. Communities are diverse and therefore protocols may vary and each should be respected as such. It is always desirable that methodologies be investigated and adapted to represent Aboriginal worldviews of research through working in equivalent intercultural partnerships with communities [26, 40, 41].

Principle 9. RECIPROCITY:

Research should deliver tangible benefits to Aboriginal and Torres Strait Islander communities. These benefits should be determined by Aboriginal and Torres Strait Islander people themselves and consider outcomes and processes during, and as a result of, the research.

Aboriginal and Torres Strait Islander communities and health services are frequently under-resourced and overburdened [25]. Community members and leaders often carry large responsibilities to maintain services, community governance systems, and provide constant support in relation to cultural matters, family responsibilities and community obligations. In many instances, most of this work is voluntary or expected, and frequently, the same individuals or organisations within communities are approached to support research and other community-based projects from many differing groups. In this context, it is entirely reasonable for Aboriginal and Torres Strait Islander communities or Community Controlled Services to expect something back for their involvement in research [29, 34].

Research benefits universities, institutions and individual researchers in many ways (e.g. ownership of knowledge, patents and publication of journal articles and books). Potential benefits should be identified and ways found to share these with local communities [18, 23]. Research should not further deplete resources in communities. Likely human, time and financial costs of engagement should be clearly and honestly discussed and appropriate support negotiated.

The Aboriginal community should be able to decide that their participation in the research process does not disadvantage them [34]. Benefits from the research should be discussed with communities once they have had a suitable time to consider the proposal [20, 22, 42]. Researchers must be committed to ensuring that research aims provide some benefit for Aboriginal communities from the outset. Researchers have an obligation to ensure the research has the ability to improve health and social contexts [18, 35].

3.2 Do I Need To Seek Ethics Approval?

The purpose of an ethics committee is to review your proposed research to ensure that it meets all relevant ethical values.

Human research ethics committees play a central role in the Australian system of ethical oversight of research involving humans. They review research proposals involving human participants to ensure that they are ethically acceptable and in accordance with relevant standards and guidelines [43].

Almost any research activity that involves human participation (including completion of questionnaires, interviews and focus groups, as well as access to biological samples, medical records and other personal information which is not on public record) is considered human research and will therefore require an application to relevant ethics committees. The exceptions to this rule are [43]:

- using data already in the public domain,
- collecting administrative information specifically for making improvements to processes and procedures,
- developing teaching and learning resources; or
- collecting information for quality assurance or audit purposes

and

- the information is owned by and collected within your organisation; and
- the information or the outcomes of any manipulation of this information is not presented to or published for use by any other individual or body external to your organisation.

It is better, however, to err on the side of caution and seek an opinion from an ethics committee if you are in any doubt as to whether an ethics approval is required.

3.2.1 Which Human Research Ethics Committee/s Should I Approach?

There are a number of human research ethics committees in Australia, each with their own process and timelines for submitting, reviewing and responding to ethics applications. In the first instance you will need to determine which ethics committee or committees you should seek approval from and then check their submission and meeting dates before downloading the application form. A list of Australian ethics committees that are endorsed by the National Health and Medical Research Institute can be found at <https://www.nhmrc.gov.au/health-ethics/human-research-ethics-committees-hrecs/list-human-research-ethics-committees> .

If you need to apply to more than one ethics committee it may be beneficial to consider using the National Ethics Application Form (NEAF). The benefit of the NEAF is that you will only need to complete the ethics application once. The disadvantages are that not all ethics committees accept a NEAF application and because the form attempts to capture everything any ethics committee might want to know, it is quite lengthy. You will also need to remember that there are two types of NEAF applications:

- The website for the national NEAF is at <https://www.neaf.gov.au/>
- The NEAF specifically designed for some ethics committees operating in Queensland and New South Wales, is <https://www.ethicsform.org/au/SignIn.aspx>

A word of warning: While information from the national NEAF can be automatically uploaded to the Queensland and New South Wales NEAF form, this is not the case in reverse.

3.2.2 What Type of Information Will I Need to Provide?

While each ethics committee will have a list of information that they require in order to assess an application, in general ethics committees will be interested in the:

- name and affiliations of investigators,
- aims, objectives as well as primary questions and/or hypotheses,
- significance of the research,
- how the participants and/or the population more generally will benefit from the research,
- who will participate and how will they be contacted and invited to participate,
- how you will ensure that consent from participants is informed and voluntary,
- how the study will be undertaken including how the data will be collected and analysed (see Chapter Four); and
- how the findings will be disseminated.

If you are intending to invite Aboriginal and Torres Strait Islander people to participate in research you may also be asked to:

- explain how you have consulted with the community or communities,
- demonstrate that you have broader community or communities' support; and
- identify opportunities for strengthening the capacity of Aboriginal and Torres Strait Islander people.

You may also be asked to specifically address Values and Ethics - Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research (<https://www.nhmrc.gov.au/guidelines/publications/e52>).

3.2.3 When Should I Communicate with an Ethics Committee?

At a minimum, ethics committees will need to receive a regular report or update on how your research is progressing. In addition, at the end of the project ethics committees will usually also require a final report detailing the findings and noting that the research has been completed.

Ethics committees will also require you to seek approval for any additions and/or changes to the approved study design and any information which may impact on or compromise the ethical conduct of the research.

3.3 Key Messages From Chapter Three

- 1) There are a range of values which must underpin the conduct of ethical research including:
 - a. National Statement for Ethical Conduct in Human Research
 - b. Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research
 - c. State, regional and/or local level ethical guidelines
- 2) Ethics committees review your proposed research to ensure that it meet all relevant ethical values.
- 3) Approval from the relevant ethics committee/s must be obtained prior to commencing any research.

3.4 Resources Relating to Chapter Three

3.4.1 Australian Human Research Ethics Committees:

<http://www.nhmrc.gov.au/health-ethics/human-research-ethics-committees-hrecs/list-human-research-ethics-committees#nt>

3.4.2 Ethical Values and Standards

National Statement on Ethical Conduct in Human Research 2007 - Updated May 2013:

<http://www.nhmrc.gov.au/guidelines/publications/e72>

Values and Ethics - Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research:

<http://www.nhmrc.gov.au/guidelines/publications/e52>

Guidelines for Ethical Research in Australian Indigenous Studies:

<http://www.aiatsis.gov.au/research/docs/GERAIS.pdf>

Keeping research on track: a guide for Aboriginal and Torres Strait Islander peoples about health research ethics:

<http://www.nhmrc.gov.au/guidelines/publications/e65>

An interview with Alwin Chong and Diane Walker on Researching Indigenous Health in The Wire, 18 July 2011:

<http://www.lowitja.org.au/resources-researchers#sthash.o4OylGrY.dpuf>

3.4.3 Human Research Ethics Committees

The National Health and Medical Research Council has compiled a list of Human Research Ethics Committee:

<https://www.nhmrc.gov.au/health-ethics/human-research-ethics-committees-hrecs/list-human-research-ethics-committees>

3.4.4 Peak Bodies Representing Aboriginal Community Controlled Health Organisations

National – National Aboriginal Community Controlled Health Organisation:

<http://www.naccho.org.au/>

New South Wales – Aboriginal Health & Medical Research Council of New South Wales:

<http://www.ahmrc.org.au/ethics2.php>

Northern Territory - Aboriginal Medical Services Alliance Northern Territory:

<http://www.amsant.org.au/>

Queensland – Queensland Aboriginal and Torres Strait Islander Health Council:

<http://www.qaihc.com.au/>

South Australia – Aboriginal Health Council of South Australia:

www.ahcsa.org.au

Tasmania – Tasmania Aboriginal Centre Inc.:

<http://tacinc.com.au/>

Victoria – Victorian Aboriginal Community Controlled Health Organisation Inc.:

<http://www.vaccho.org.au/>

Western Australia – Aboriginal Health Council of Western Australia:

<http://www.ahcwa.org.au/>

Chapter Four – Developing an Application for Grant Funding

Applying for funding to undertake research is often a complex and time consuming process. This chapter provides a brief and basic overview of how to find and apply for grant funding.

4.1 Where Do I Find the Funding?

A number of different types of organisations provide funding for health research. These can include commonwealth, state and even local government bodies, universities as well as philanthropic, professional, public and private for profit and not for profit organisations. Most university websites list and some provide alerts to the currently available grant funding with links to the funding bodies' guidelines and application forms.

It is important to note: Many funding organisations will only fund research carried out by a recognised university or research institute. In order to access these funds it may be necessary to partner or collaborate with researchers from one of these approved organisations. Finding the right research partner can, however, be difficult as they may be more focused on research outputs such as peer reviewed publications, than answering the specific question or questions of importance to your healthcare service. We suggest that you develop a written formal agreement which clearly specifies the terms of the collaboration prior to entering into the partnership including:

- who owns pre-existing and newly created intellectual property,
- who will pay for the resources required for the research; and
- methods of disseminating the research findings including who will be acknowledged on any reports or publications.

4.2 What Information will Funding Bodies Require?

While each organisation will have their own process and timelines for applying for grant funding, many require the following basic information. We have already covered the first two common parts of a grant application in previous chapters.

- **Background** – In this section you will need to describe what is already known about the area and also where the current gaps are. Information on how to find the literature which may help with developing a background to the research can be found in Chapter Two of this manual.
- **Aims and objectives including the research questions or hypotheses** – Outline the research question or problem you are going to address clearly. Information on how to develop a research question or hypothesis is provided in Chapter One of this manual.

In this chapter we will also provide a basic understanding of:

- **Methodology or approach** – Ensure that you clearly explain how you will address the question or test the hypothesis. Convince them that you can achieve the desired outcome.
- **Role of personnel** – Only include people on the team if they are essential to achieve the aims of the research. Detail their contribution and clearly articulate their skills and experiences.

- **Budget and Budget Justification** – Ensure that your budget is realistic and is within the funding available. Explain how each component of the budget is essential to carry out the research.

Please note: While these are generic topics that most grant applications will require you to address, it is important to also:

- carefully read and apply the funding guidelines,
- address the specific funding objectives in your application,
- reference any claims you make in the application; and
- start planning and writing the application as soon as possible – it always takes longer than you think.

4.3 Writing the Study Plan or Protocol - A Very Short Overview

As previously described in Chapter One of this manual, broadly speaking there are two types of research methods - **quantitative** and **qualitative**. Both have their own specific purpose, assumptions and processes (Table 4.1) which in turn will influence your study design.

Table 4.1: Comparison of quantitative and qualitative research

	Quantitative Research	Qualitative Research
Purpose	To quantify or measure a phenomena of interest or to identify cause and effect relationship (i.e. does smoking lead to lung cancers).	Describes and/or deepens the understanding of a phenomena (i.e. How do Aboriginal and Torres Strait Islander people assess well-being?).
The question or hypothesis	Clear question or hypothesis specified prior to starting.	Broad questions are identified before commencing but the direction can change as the study develops.
Ways in which participants are chosen	A sample of participants chosen to represent a larger population (i.e. medical records from five different health centres).	Individuals and groups may shed light on other groups but findings are not necessarily generalizable (i.e. people from one or two communities).
Types of data collected	Objective measures which are quantifiable (i.e. the percentage of people who have completed an adult health check).	Subjective assessments (i.e. people’s understanding and experiences of well-being).
Examples of ways in which data is collected	Collecting biological samples, surveys, medical records.	Interviews, focus groups and observations.

How is quality of the study defined?

Statistical tests for reliability and validity. Reliability refers to the ability to replicate the results, whereas validity refers to whether the results are correct and whether they could be generalised to other contexts.

Established by using multiple sources of evidence, referred to as triangulation. May be particularly interested in credibility and trustworthiness (do the findings represent a true picture).

4.4 How do I Begin to Design a Quantitative Research Project?

Epidemiology is a quantitative study method which is specifically concerned with understanding the distribution and determinants of health for a given population. There are a number of different types of quantitative methods which are used to address these types of questions [44-47] (Figure 4.1).

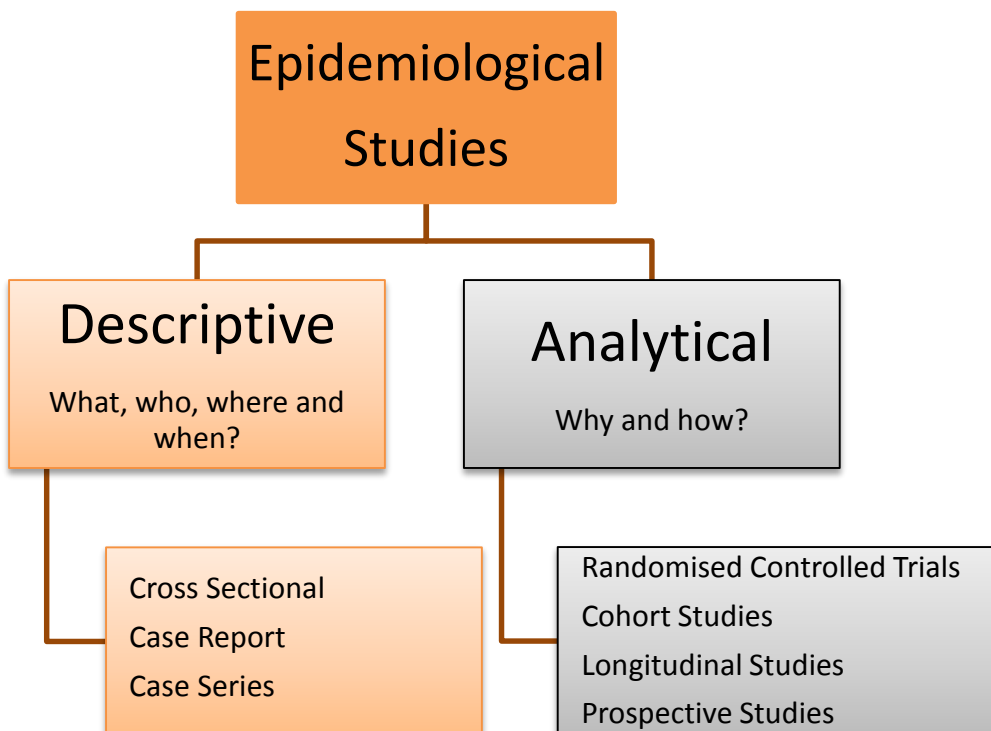


Figure 4.1: Taxonomy of Epidemiological Studies

Descriptive epidemiology seeks to understand the prevalence, characteristics and timing of disease and answers questions specific to **who, what, where and when**. Descriptive epidemiology study methods include:

- **Cross Sectional Studies** involve studying a cross-section of a population at one particular time point. Because the exposure of interest and the outcome are measured

at the same time, it is not possible to infer causality but instead may suggest an association.

- **Case Reports and Case Series** are a detailed record or history of interesting cases. They are designed to be descriptive and for this reason cannot test a hypothesis or answer a question. One of the major limitations is that they usually only involve a limited number of cases.

Analytic epidemiology focuses more on understanding the occurrence of a disease and is used to test hypotheses about the association between an exposure and outcomes. These types of studies are designed to address **why and how**. Analytic epidemiology study methods include:

- **Randomised Controlled Trials** are considered to be the gold standard for undertaking experimental studies including drug trials and other interventions. The main characteristics of a randomised controlled trial are that 1) there are at least two participant groups – an experimental group and a control group, and 2) that participants are randomly assigned to a group. The primary strength of a RCT is that it is the most rigorous method for measuring short-term outcomes. One of the main limitations is the very large sample size needed to measure the effects of infrequent outcomes.
- **Cohort Studies** are studies that sample a part or segment of a particular population with a characteristic in common such as cancer patients or a particular age group. A cohort study assess incidence in the same group of people overtime.
- **Longitudinal and Prospective Studies** involve following a group of similar individuals in order to determine how certain factors change overtime.

An Example of a Quantitative Study Design:

SUSTAINING BETTER DIABETES CARE IN REMOTE INDIGENOUS AUSTRALIAN COMMUNITIES.

RESEARCH QUESTION: Can the implementation of an improved chronic disease management system for people with diabetes be sustained after the completion of the initial trial?

PROBLEM:

Inhabitants of Torres Strait Islands have the highest prevalence of diabetes in Australia and many preventable complications. In 1999, a one year randomised cluster trial showed improved diabetes care processes and reduced admissions to hospital when local Indigenous health workers used registers, recall and reminder systems, and basic diabetes care plans, supported by a specialist outreach service. This study looked at whether those improvements were sustained two years after the end of the trial.

DESIGN:

Three year follow up clinical audit of 21 primary healthcare centres and review of admissions to hospital in the previous 12 months.

KEY MEASURES FOR IMPROVEMENT:

Number of people on registers, care processes (regular measures of weight, blood pressure, haemoglobin A1c, urinary protein concentration, and concentrations of serum lipids and creatinine), appropriate clinical interventions (drug treatment and vaccinations), and intermediate patient outcome measures (weight, blood pressure, and glycaemic control). Admissions to hospital [48].

The full-text article is available free of charge by going to <http://www.ncbi.nlm.nih.gov/pubmed> and typing the article title into the search box.

4.4.1 Identifying Who Will Participate

Your question or hypothesis will determine who will be invited to participate in your quantitative research.

For example:

Question: Where else do patients of your healthcare service seek treatment?

Participants: The patients attending your healthcare service.

In some cases, information about individuals, rather than the individuals themselves may be involved in your research. Remember, you will still need to seek the informed voluntarily consent before accessing personal and/or healthcare service data (see Chapter 3).

For example:

Question: How many Aboriginal and Torres Strait Islander peoples in my healthcare service have been diagnosed with hypertension in the past 12 months?

Participants: The medical records of Aboriginal and Torres Strait Islander people in my healthcare service.

It is usually impossible to include an entire population of interest in your study, it is normal for a carefully chosen sub-section of the population to be chosen. Sampling is a technique, or a procedure for selecting this sub-set. In quantitative studies good sampling aims to achieve representativeness [49]. If a sample is not representative of the entire population then you may introduce a level of bias. This means the study's results will not be generalizable to the rest of the population from which the sample was taken.

One way in which you could identify a representative sample of the population is to construct a random sample. Random sampling means that each member of the population has as much chance of being included into the sample as the next person [49]. A quick way of constructing a random sample is to put everyone into a hat and choose a selection or sample. If the population includes a number of sub-groups, however, you may wish to choose a selection from each sub-group, referred to as a stratified random sample.

Calculating the actual number of people that you need in your sample can be difficult and will depend on the type of study you wish to undertake [50]. Sample size calculations are important. If the sample size is too small you may not be able to detect an effect. However, collecting data from a larger than necessary sample is costly both in terms of money and time [51]. There are a number of online sample size calculators that can be used but we suggest that in the first instance you understand some of the principles behind calculating a sample size. As a first step, you may wish to read the article by Kadam and Bhalerao [52] who discuss some basic sampling principles. Noordzij et al [51] then progress to describing in more detail some of the techniques used to calculate the correct sample size for certain studies.

4.4.2 Data Collection Methods

You will also need to consider how you will collect the data from your sample. Quantitative data collection methods rely on structured data collection instruments that fit diverse information into predetermined response categories. Results can then be summarised, compared, and generalized. Typical quantitative data gathering strategies include:

- experiments and clinical trials,
- observing and recording well-defined events (e.g. counting the number of people who attend a particular clinic on any one day),
- obtaining data from existing information systems (e.g. medical records); and
- administering surveys (e.g. face-to face questionnaires).

4.4.3 Starting to Analyse the Data

Analysis is one of the most crucial stages in a study and commences as soon as the data collection has been completed. It must be done in a careful and considered way. The first step is to ensure you have a clean data set (Figure 4.2).

Checklist for managing data

- Code data appropriately
- Enter data into a database
- Conduct range and visual checks
- Make all corrections that are needed
- Check for duplicate records in key fields

Figure 4.2: Checklist for managing data adapted from Mellis et al (2001) [46]

The type of analysis undertaken depends on your question and the data that will be included in the analysis. While specific analysis techniques are beyond the scope of this resource manual, developing some initial brief graphical displays may assist by identifying and understanding patterns of association within your data set.

Stem and Leaf Display: In order to construct a stem and leaf display [53, 54].

1. Identify the types of digits in your variable. For example for the number 16 you would have two digits (10's and 1's). The 10's are the stem and the 1's are the leaf.
2. Construct a column of all the possible sets of leading digits or stems for the range of values in the distribution in descending order. Draw a vertical line to the right of these stems.
3. For each score, record the leaf on the line labelled by its stem and arrange the leaves in increasing order from left to right.

For example, the following table represents the age of male and female patients that attend a smoking cessation program at one Aboriginal Community Controlled Health Centre

Males	Females	Becomes	
51	19	1	9
51	21	2	1
53	33	3	3
57	34	3	4
60	44	4	4
61	45	4	5
67	57	5	7
67	68	6	8

The corresponding leaf and stem plot would look like:

Males		Females
	1	9
	2	1
	3	3,4
	4	4,5
1,1,3,7	5	7
0,1,7,7	6	8

What this tells us about the distribution is that while the age of female participants is reasonably evenly spread from 19 to 68 ages of age, only males in their 40's and 50's are participating.

4.5 How do I Begin to Design a Qualitative Study?

There are also a number of different types of qualitative methods. The particular methodology chosen will depend on what you are interested in finding out and the type of data that is available. Following are just a few primary examples out of many variations that are available to qualitative researchers [55-57].

1. **Phenomenology** is interested in describing the world in which we live through the eyes of the individual participants. The focus here is on the experience of the individual.
2. **Ethnography** is interested in culture and how groups of people interact with each other and their environment. The focus here is on the experience of society or the social group.
3. **Grounded Theory** is a method for developing theories about the world around us and how it functions from the bottom up. There are no preconceived ideas to this cyclic process which involves the collection and analysis of data in order to inform the focus for the next round of data collection and analysis.
4. **Discourse Analysis** analyses talk, texts and dialogues in order to understand meanings and perspectives.
5. **Fundamental Qualitative Description** is an approach often used in health research which tends to place a greater emphasis on describing and less on interpreting the data than some other qualitative methods. Thus, in comparison to other methods, the findings or results are often a detailed and a thoughtful analysis and description or account of a phenomena of interest. An example of a Qualitative Description designed is provided in the abstract below.

An Example of a Qualitative Study:

STRATEGIC APPROACHES TO ENHANCED HEALTHCARE SERVICE DELIVERY FOR ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLE WITH CHRONIC ILLNESS: A QUALITATIVE STUDY.

RESEARCH QUESTION: What are the barriers and facilitators to providing care and support for Aboriginal and Torres Strait Islander people with chronic illness?

BACKGROUND:

Aboriginal and Torres Strait Islander people with chronic illness confront multiple challenges that contribute to their poor health outcomes, and to the health disparities that exist in Australian society. This study aimed to identify barriers and facilitators to care and support for Aboriginal and Torres Strait Islander people with chronic illness.

METHODS:

Face-to-face in-depth interviews were conducted with Aboriginal and Torres Strait Islander people with diabetes, chronic heart failure or chronic obstructive pulmonary disease (n=16) and family carers (n = 3). Interviews were transcribed verbatim and the transcripts were analysed using content analysis. Recurrent themes were identified and these were used to inform the key findings of the study [58].

The full-text article is available free of charge by going to <http://www.ncbi.nlm.nih.gov/pubmed> and typing in the article title into the search box.

4.5.1 Identifying Who Will Participate

Similar to quantitative research methods, your question will determine who will be invited to participate in your study.

For example:

Question: How can we improve access to care for Aboriginal and Torres Strait Islander people in my community?

Participants: Aboriginal and Torres Strait Islander people in my community.

It is not always necessary in qualitative research to pre-define the number of participants prior to beginning the study. Unlike quantitative research which focuses on a representative sample, qualitative researchers aim to gather data until they no longer hear or see something anything new. This is referred to as data saturation [59]. As a rule of thumb, the more heterogeneous the participants, the greater the number of participants required for saturation.

4.5.2 Data Collection Methods

There are a number of different qualitative approaches to data collection. Which you choose will again depend on your research question and methodology. The primary data collection techniques include the following [60].

- **Interviews** are useful for exploring the individual beliefs, perspectives and views of each participant. Structured interviews follow a strict pre-specified format. Semi-structured interviews follow a framework which allows for the researcher to explore particular areas of interest.
- **Focus Groups** are designed to focus on an item or experience about which all participants have similar knowledge. The emphasis is placed on the interaction within the group as a means of drawing out information. Researchers facilitate rather than leading the discussion.
- **Observations** involve researchers recording observations in writing. These written observations are the data.
- **Field notes** are a record of your data collection experiences including your thoughts about how you felt about the interview, what surprised you about what was said as well as those non-verbal cues which would not otherwise have been recorded. Rather than a separate qualitative data collection technique, therefore, field notes strengthen the quality of other data collection techniques.

Whatever data collection method you use, it is important to remember that you as the researcher will always influence the outcomes. You may, therefore, need to consider whether you are the best person to conduct the interviews or focus groups, and even make the observations. This can be particularly important when attempting to collect data about sensitive issues.

Triangulation in qualitative research focuses on viewing things from more than one perspective by collecting different types of data [60]. For example, you may wish to interview individual community members about how healthcare services could improve access to care, while at the same time facilitate a focus group of key Aboriginal Elders to discuss this issue from their perspective.

4.5.4 Starting to Analyse and Interpret the Data

As data collection finishes once you do not find anything new in the data, qualitative analysis usually begins as soon as you have data to analyse. There are three distinct steps to qualitative analysis. Step one involves preparing the data. If you have recorded interviews or focus group discussions you will need to transcribe the data into written format and organise any field notes you have collected along the way [61].

Step two involves analysing these data. One of the more common frameworks for analysing data involves reading the transcript/s in full and then breaking them down into smaller units of meaning. Each unit should contain all of the words, sentences and even paragraphs that speak to that meaning. You may notice that some units end up speaking to the same or similar concept. These units can be grouped together into a single theme [62].

The third step involves interpreting your data. This involves looking for patterns and relationships between themes in order to identify higher level concepts or meanings which together answer your question. This third step involves a process of reflection and may involve going back to the units you developed and even the original transcripts [61, 62].

One of the most important considerations when analysing and interpreting qualitative data is the impact that you as a researcher have on the outcome. Not only does “who you are impact” on how the participants respond to, for example, interview questions, but it is through your eyes that the analysis and interpretation of the data takes place. One way of lessening your influence over the outcomes is to have another person also undertake the analysis and interpretation process. You can then compare and discuss the results. Another way of checking the results is to have the participants read and comment on the findings [60, 61].

4.6 How do I Develop a Budget and a Budget Justification?

There are three primary rules for developing a research budget [63]. First, the most important part of developing a research budget is to ensure that they meet the guidelines set out by the funding body. Second, the budget should be based on your proposed methodology.

The third rule is to ensure that every allowable expense is included in the budget allocation. Funding bodies will usually have a pre-defined limit in terms of the maximum level of funding that can be sought. This does not mean that your application should request this amount. Instead every budget line should be a justifiable expense. There is also the possibility that asking for a smaller amount may make your application more attractive.

While budgets do not usually fund the contribution of investigators, there is often an expectation that other staffing costs can be included. One way of calculating the staffing

budget is to map out the research activities and then estimate how much time it will take and then what skill level will be needed to undertake them. This will help to ensure that:

- there is sufficient staff funding in your budget,
- the amount of staff funding you are requesting is justified; and
- will help with the development of a role or job description which can be given to the staff members at the beginning of the research project.

On the other hand, it is important to ensure that you do have sufficient funding to complete the study as outlined in the study plan or design. Additionally, some funding bodies will offer you less than what you request. If this happens you may need to consider whether it is possible to still undertake the research.

4.7 Who Are the Investigators?

Named investigators on research applications are usually those people who have or will contribute a significant amount of their intellectual property to the research. In the past, researchers have tended to be very focused on academic input. However, it is also important to recognise and acknowledge the intellectual property that is contributed by community members. Inviting them to be an investigator is one way of recognising their contribution.

4.8 Key Messages from Chapter Four

- 1) There are many types of organisations that fund research.
- 2) While each funding body will have their own particular application, there is usually a request for:
 - a. Background to your research question
 - b. Aims and objectives of your research
 - c. Study plan or protocol
 - d. List of investigators
 - e. Budget and budget justification
- 3) In writing your study plan or protocol, remember there are two main research methods:
 - a. Quantitative research methods are primarily used to establish or answer questions that relate to “when”, “where”, “how many” and “how often”.
 - b. Qualitative research methods are primarily interested in establishing “how” or “why” things happen and are used to answer research questions that pertain to understanding people, their experiences, as well as the contexts in which they occur.

4.9 Resources Relating to Chapter Four

4.9.1 Conducting Quantitative and Qualitative Research

A more detailed description of both quantitative and qualitative research methods including how to construct a research question or a hypothesis as well as describing how data is collected and analysed can be found at:

<http://www.socialresearchmethods.net/kb/contents.php>

An overview of qualitative research methods is provided by the University of Connecticut including links to information about qualitative data collection methods:

<http://www.gifted.uconn.edu/siegle/research/qualitative/qualitativeinstructornotes.html>

One method for helping to calculate your sample size in quantitative research:

http://www.sciencebuddies.org/science-fair-projects/project_ideas/Soc_participants.shtml

Calculating a sample size and what's important:

<http://www.qualtrics.com/blog/determining-sample-size/>

4.9.2 Where to Find Grant Funding

Royal Australian College of General Practitioners:

<http://www.racgp.org.au/support/foundation/grantsawards/grants/>

Australian Research Council:

<http://www.arc.gov.au/>

National Health and Medical Research Council:

<https://www.nhmrc.gov.au/grants/apply-funding>

Macquarie University:

http://www.research.mq.edu.au/for/researchers/applying_for_grants

Primary Health Care Research Information Service:

<http://www.phcris.org.au/roar/funding.php>

University of New South Wales:

<https://research.unsw.edu.au/applying-funds>

University of Queensland:

<http://www.uq.edu.au/research/research-management/grants-calendar>

4.9.3 How to Apply for Grant Funding

Curtin University – Tips for Writing a Grant Application:

<http://research.curtin.edu.au/research-funding/tips.cfm>

University of Western Australia – Writing the Research Proposal:

<http://www.research.uwa.edu.au/staff/applying-for-funding/funding-proposal>

Human Frontier Science Program – The Art of Grantsmanship:

<http://www.hfsp.org/funding/art-grantsmanship>

On the Art of Writing a Proposal:

<http://www.ssrc.org/publications/view/the-art-of-writing-proposals/>

Primary Health Care Research Information Service – Applying for Research Funding:

http://www.phcris.org.au/guides/apply_for_funding.php

Flinders University – Fund Assist:

<http://fundassist.flinders.edu.au/>

4.9.4 Developing a Research Budget

Click on the Costing Grants link for a presentation which explains amongst other things - what should be included in a research budget:

<http://www.adelaide.edu.au/rb/apply-funding/>

Chapter Five – Ensuring Research Informs Policy and Practice

While this is the final chapter in this manual, turning research findings into useful policy and practice improvements, referred to more generally as knowledge translation, is the most important outcome and should be considered as soon as the aim and/or objectives of the research are identified. Chapter four will provide you with some tips about how to do this.

5.1 Research, Policy and Practice

For knowledge translation, the most important lessons for researchers, policy makers and practitioners alike are that:

- improving practice must be the primary focus of both policy and research,
- healthcare practice can and should drive research and policy, as much as research and policy can and should drive practice change; and
- small changes to research have the potential to result in large changes to health practice, both positive and negative (Figure 5.1).

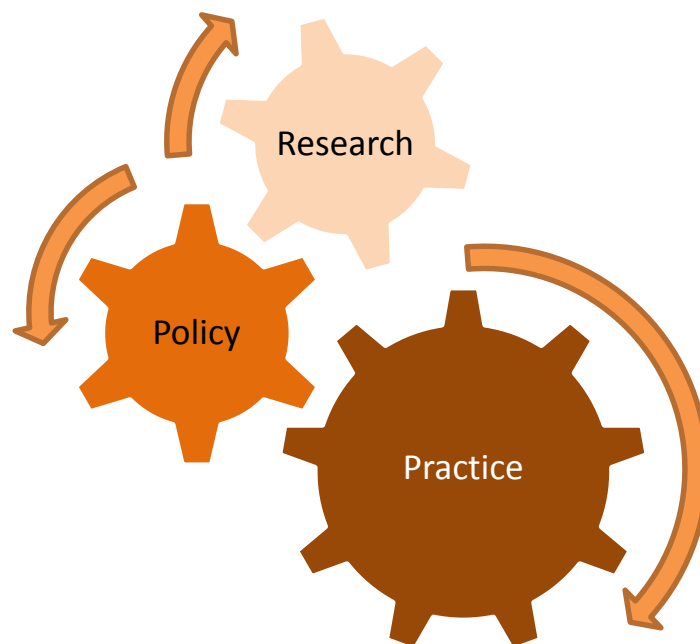


Figure 5.1: Putting research into perspective

Importantly, all research evidence is context specific [64]. Therefore, if you are relying on research conducted in another context, judgements about the applicability of the findings to your specific primary healthcare service will need to be made. In particular, factors such as the beliefs and values of the community, the abilities and skills of your staff, and the resources and systems available within the healthcare service must be considered.

5.2 Supporting Sustainable Changes

Ensuring that research informs improvements to both policy and practice is one of the most important challenges for public health this century [65]. In the past, researchers have tended to rely on presentations and/or peer reviewed publications to distribute their findings. The

consequence being that research findings either didn't make a difference to policy and/or practice or alternatively took so long to inform healthcare that they were sometimes no longer relevant. **This is no longer acceptable.** There is now a greater focus on proactive ways of transferring the findings from research into policy and practice [66, 67].

Often referred to as knowledge translation, this process [67, pp 2-3]:

- includes all steps between the creation of new knowledge and its application,
- needs multidirectional communications,
- is an interactive process,
- requires ongoing collaborations among relevant parties,
- includes multiple activities,
- is a nonlinear process,
- emphasises the use of research-generated knowledge (which may be used in conjunction with other types of knowledge),
- involves diverse knowledge-user groups,
- is user- and context-specific,
- is impact-orientated; and
- is an interdisciplinary process.

When thinking about proactive knowledge translation, the following four areas need to be considered:

1. policy and decision makers
2. health providers
3. health systems
4. communities

5.2.1 Translating Research into Policy

Not every research finding will require a change of Commonwealth, State or even primary healthcare centre policies. However, there is an art to providing the right message in the right way so that policy makers can utilise the evidence when it is required. Policy briefs are the best avenues for communicating with policy and decision makers, especially because these people are usually particularly time poor and will tend not to want to read long documents. Policy briefs, therefore, must be clear and concise, containing the following basic essential elements:

- A brief title
- A short executive summary
- A statement of the problem
- Essential background information or context
- A note of any pre-existing policies
- Policy recommendations
- An argument for why the recommendations should be considered

Policy briefs can, however, be supported by a range of other material tailored to 1) advisors, who may have more time to consider and advocate for the recommendations and 2) administrators, who may be asked to consider implementing the recommendations at a later stage. The 1-3-25 pages approach is a widely accepted suite of documents which together provide information to all of these diverse audiences [68].

Document Length	Audience	Purpose
One Pager	Time Poor Policy and Decision Makers	An overview of the problem, context and recommendations
Three Pager	Policy Advisors who are interested in more detail	A more detailed executive summary with brief information about resources required for implementation
Twenty-Five Pager	Administrators	A scientific paper or synthesis of the findings including discussion pertaining to implementation of recommendations

5.2.2 Capacity Strengthening as a Knowledge Translation Exercise

Strengthening the capacity of individuals is an important first step in translating research findings into practice. Depending on the changes that are required, informal rather than formal professional development sessions may be sufficient. In order to implement any changes you may need to consider:

- What do staff already know?
- What additional information do they require?
- Are any additional skills needed?
- How can we effectively and appropriately communicate the information and provide these skills?

Another way of supporting the translation of research findings into health practice is to involve the staff in the knowledge translation process. The focus is not so much on transferring the knowledge to them but instead is an interactive process whereby they own and are responsible for the changes that need to be made [65]. Involving staff in the knowledge translation process has the added benefit of ensuring that contextual factors specific to the primary healthcare service are considered before changes are made. Together, the healthcare service team could:

- consider what changes would be required,
- identify how these changes could be implemented; and
- develop plans for resourcing and embedding the changes into the plans, processes and/or healthcare service procedures.

5.2.3 Engaging Communities

What is sometimes overlooked is that changes to healthcare services often affect the community. Consequently, it is necessary to ensure that community members are consulted before changes to their primary healthcare service are implemented. Involving community members in the knowledge translation process has the added benefit of ensuring that contextual factors specific to the community are considered before changes are made. If the changes were identified by the community in the first instance, this will contribute to their acceptance and would be highly recommended. However, you would still need to consider informing and seeking feedback from communities by:

- engaging with community elders,
- organising a community forum; and
- talking to patients the next time they access the healthcare service.

5.2.4 Sustainable System Change

So far we have discussed ways in which individuals can be informed about, as well as contribute to, knowledge translation. However, in order to bring about sustained change, it will be necessary to institutionalise the change.

Institutionalising the change involves three stages [69]:

1. Changes to the healthcare service structure or procedures
2. Routine, repetitive reinforcement in order to ensure that change becomes a habit
3. Saturation where the change is integrated into all systems and sub-systems within the healthcare service

To start the process of institutionalising change, consider what system supports are required at an organisational level.

- Are there resources in place to support the required changes in the short and long term including appropriate levels of funding and staffing as well as the necessary technology to implement changes?
- What policies, procedures and/or processes need to change in order to ensure sustainability?

5.3 Monitoring and Evaluating the Outcomes

Monitoring and evaluating change as it happens not only provides information about its effectiveness and an opportunity to implement any improvements, but also further embeds the changes throughout the healthcare service. Therefore, rather than leaving the evaluation to the end, staff need to be planning for monitoring and evaluation even before the change is implemented [64]. This will ensure you are proactively (rather than retrospectively) collecting the data you need.

To undertake an effective monitoring and evaluation you will need to identify: [11].

1. Short term key indicators that will tell you if you are on track to making an improvement.
2. Data or information which will measure each of the key indicators.
3. A defined target or goal for each key indicator.
4. The people or person responsible for collecting, as well as assessing and reporting on the extent to which key indicator targets or goals were met.

Key Indicators or targets need to be **SMART** [70, p.1]

- **Specific** (to the ultimate health goal to be pursued),
- **Measurable** (able to be monitored with data that either exist or can be collected)
- **Accurate** (in order to know whether the target has been hit),
- **Realistic** (challenging but actually achievable) and
- **Time bound** (time taken to achieve the target should be specified)

An Example of an Evaluation

Responding to GPs' information resource needs: implementation and evaluation of a complementary medicines information resource in Queensland general practice.

ABSTRACT

BACKGROUND:

Australian General Practitioners (GPs) are in the forefront of primary healthcare and in an excellent position to communicate with their patients and educate them about Complementary Medicines (CMs) use. However previous studies have demonstrated that GPs lack the knowledge required about CMs to effectively communicate with patients about their CMs use and they perceive a need for information resources on CMs to use in their clinical practice. This study aimed to develop, implement, and evaluate a CMs information resource in Queensland (Qld) general practice.

METHODS:

The results of the needs assessment survey of Qld general practitioners (GPs) informed the development of a CMs information resource which was then put through an implementation and evaluation cycle in Qld general practice. The CMs information resource was a set of evidence-based herbal medicine fact sheets. This resource was utilised by 100 Qld GPs in their clinical practice for four weeks and was then evaluated. The evaluation assessed GPs' (1) utilisation of the resource (2) perceived quality, usefulness and satisfaction with the resource and (3) perceived impact of the resource on their knowledge, attitudes, and practice of CMs.

RESULTS:

Ninety two out of the 100 GPs completed the four week evaluation of the fact sheets and returned the post-intervention survey. The herbal medicine fact sheets produced by this study were well accepted and utilised by Qld GPs. The majority of GPs perceived that the fact sheets were a useful resource for their clinical practice. The fact sheets improved GPs' attitudes towards CMs, increased their knowledge of those herbal medicines and improved their communication with their patients about those specific herbs. Eighty-six percent of GPs agreed that if they had adequate resources on CMs, like the herbal medicine fact sheets, then they would communicate more to their patients about their use of CMs.

CONCLUSION:

Further educational interventions on CMs need to be provided to GPs to increase their knowledge of CMs and to improve their communication with patients about their CMs use [71]. This article is available free of charge at <http://www.biomedcentral.com/1472-6882/11/77>

In addition to internally focused monitoring and evaluation, horizontal evaluation can be used to simultaneously gather views from a range of people that may be impacted by or involved in the change [72]. Horizontal evaluation has the additional benefits of enhanced information and learning opportunities for all participants, and provides an opportunity to garner the broader views of both internal and external stakeholders at the same time. Originally developed for use in agricultural research, horizontal evaluation brings stakeholders such as health providers and community members together, in order to identify what they perceive to be the benefits of and also problems associated with the change.

An Example of an Evaluation Capturing the Views of Multiple Stakeholders**Training in three Indigenous healthcare settings in north Queensland****Abstract**

Objective: To evaluate the pilot phase of a tobacco brief intervention program in three Indigenous healthcare settings in rural and remote north Queensland.

Methods: A combination of in-depth interviews with health staff and managers and focus groups with health staff and consumers.

Results: The tobacco brief intervention initiative resulted in changes in clinical practice among healthcare workers in all three sites. Although health workers had reported routinely raising the issue of smoking in a variety of settings prior to the intervention, the training provided them with an additional opportunity to become more aware of new approaches to smoking cessation. Indigenous health workers in particular reported that their own attempts to give up smoking following the training had given them confidence and empathy in offering smoking cessation advice. However, the study found no evidence that anybody had actually given up smoking at six months following the intervention. Integration of brief intervention into routine clinical practice was constrained by organisational, interpersonal and other factors in the broader socio-environmental context.

Conclusions/implications: While modest health gains may be possible through brief intervention, the potential effectiveness in Indigenous settings will be limited in the absence of broader strategies aimed at tackling community-identified health priorities such as alcohol misuse, violence, employment and education. Tobacco and other forms of lifestyle brief intervention need to be part of multi-level health strategies. Training in tobacco brief intervention should address both the Indigenous context and the needs of Indigenous healthcare workers [73]. The abstract of this is available free of charge by going to <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-842X.2002.tb00342.x/abstract>

5.4 Key Messages From Chapter Five

- 1) The best time to think about how research findings will improve service delivery and/or health outcomes is when you are planning the research.
- 2) Not all research findings will require a change in policy for implementation. However, when necessary it is important to provide the right message in the right way so that policy makers understand the implications.
- 3) Strengthening the capacity of healthcare providers is often an important first step in translating research findings into practice.
- 4) Involving community members in the knowledge translation process has the added benefit of ensuring that contextual factors are considered before changes are made.
- 5) In order to bring about sustained change, it will also be necessary to institutionalise the change by:
 - a. Ensuring there are resources in place to support the required changes in the short and long term.
 - b. Changing policies, procedures and/or processes to reflect the new way of doing things.
- 6) Monitoring and evaluating change as it happens not only provides information about its effectiveness and an opportunity to implement any improvements, but also further embeds the changes throughout the healthcare service.

5.5 Resources Relating to Chapter Five

Glossary of key terms relating to research utilisation.

http://www.k4health.org/sites/default/files/RU_Glossary_2011.pdf

5.5.1 Models of Knowledge Translation

The Canadian Institute of Health Research has written an extensive guide in order to lead people through a process of translating research findings into practice:

http://www.cihr-irsc.gc.ca/e/documents/kt_lm_ktplan-en.pdf

The World Health Organization provides an overview of the Knowledge-to-Action Process Framework [74] which involves knowledge inquiry, knowledge synthesis and the development of knowledge tool/products:

http://www.who.int/reproductivehealth/topics/best_practices/greatproject_KTAframework/en/

The Promoting Action on Research Implementation in Health Services (PARIHS) model describes the implementation of research in practice as a function of the interplay between the evidence to be used, the context in which it is to be placed and the method for implementation:

http://www.who.int/reproductivehealth/topics/best_practices/greatproject_KTAframework/en/

5.5.2 Preparing Policy Briefs

These guides are intended for those people responsible for preparing and supporting the use of policy briefs and ensuring that decisions about health systems are well-informed by research evidence:

<http://global.evipnet.org/SURE-Guides/>

Interesting fact sheet from Primary Health Care Research Information Service:

http://www.phcris.org.au/phplib/filedownload.php?file=/elib/lib/downloaded_files/publications/pdfs/phcris_pub_362.pdf

5.5.3 Applying Evidence in Your Healthcare Service

This article identifies some of the barriers and facilitators to implementing evidence based practice.

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1113594/>

Knowledge Management Toolkit including resources that help you develop and implement a knowledge management strategy within a health organisation:

<http://www.k4health.org/toolkits/km>

5.5.4 Evaluation

The Planning and Evaluation Wizard (PEW) is designed to allow you simple access to planning and evaluation tools that are relevant to your project stage:

<http://www.flinders.edu.au/medicine/sites/sachru/tools/>

An evaluation framework which has already proven successful was developed by the Aboriginal Allied Health Assistant Project. This framework together with other useful links and tips can be found at:

http://www.wacountry.health.wa.gov.au/fileadmin/sections/allied_health/WACHS_P_AA_HAProjectEvalFramework.pdf

The Evaluation Toolbox provides a range of tools and resources specific to sustainable community engagement:

http://evaluationtoolbox.net.au/index.php?option=com_content&view=article&id=11&Itemid=17

Glossary of Key Terms

- **Citations** –references to published scientific literature
- **Data** – information collected by the study in order to answer a research question or test a hypothesis
- **Evaluation** – a structured process for assessing and reflecting on how successful an intervention, a project and/or a program has been in meeting its aims and goals at a particular point in time [75, 76].
- **Guidelines** – a course of action or a way of practicing which are not in any way mandatory or legally enforceable
- **Grey Literature** – scientific literature which has not been peer reviewed often provided in the form of a report or a webpage
- **Intellectual Property** –original ideas, thoughts and/or inventions which have been recorded in writing (reports or books etc.), in pictures or sound and/or through the creation of something new and distinct
- **Knowledge** – encompasses understandings, facts, information, descriptions and skills that individuals (and communities) have acquired through experience, interactions and/or education [77]
- **Knowledge Translation** - the synthesis, exchange, and application of knowledge [78]
- **Memorandum of Agreement** – an intent or general understanding between two or more parties. It is in no way legally binding
- **Methods** - he strategic plan of action, process or design used to answer a research question or test a hypothesis [79]
- **Monitoring** – the regular collection of information in order to systematically and routinely assess the success of an intervention, a project and/or a program in the progression towards meeting the aims and goals [76]
- **Peer Reviewed Literature** – scientific literature which has been reviewed or evaluated by one or more people with similar skills, knowledge and experience
- **Policy** – a statement of intent or a principle adopted by government, organisations and individuals which guides decisions and directs outcomes [80]
- **Qualitative Research** –the study of phenomena in their natural setting aiming to make sense of, or understand the meanings that people bring to them [79]
- **Quantitative Research** –the study of numeric data for the purpose of describing or assessing the prevalence of a particular condition or the magnitude of relationships between phenomena
- **Research Question** – the specific areas or topics to be studied, posed as a question. [79]
- **Research Hypothesis** – the specific areas or topics to be studied, posed as an assumption or a formal statement which is tested by the study [81]
- **Sample** - a selected number of individual cases, records or research participants, drawn from a larger population to answer a research question or test a hypothesis [49]
- **Scientific Literature** – the publications including journal articles, reports, books and theses which contain and discuss information about research methodology and/or findings

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