Session Objectives

- Traditional use and evidence (TGA)
- Scientific knowledge and the scientific method
- David Sackett and the evolution of evidence based medicine (EBM)
Traditional Use and TGA
• The TGA is the body that regulates the use of all therapeutic goods in Australia
• It fulfils a similar function to the FDA the US Food and Drug Administration

• Therapeutic Goods Administration regulations state that:
  • “to claim evidence of traditional use you should ensure that your medicine or ingredient is an established part of a tradition of medicinal use within a particular paradigm or culture for over three generations”.
  • Extensive traditional use requires more than 75 years traditional use and that the use is extensively recorded in sources for traditional medicine use.
Traditional Use

• In this course you will learn to research information that comes from traditional knowledge

• You will need to go back to original sources and books that were published many years ago

• Some of this information is digitised and available on the internet some is available in public archives and at State Libraries
Types of Knowledge
Types of Knowledge Used in Health Care

- Authoritative
- Intuitive
- Empirical
- Rational-reasoning
- Scientific
Authoritative Knowledge

• expert - qualified and experienced

• people who have published a lot in a particular area

• the names you see referenced often in the literature

• you may see references to seminal books, articles, authors

• seminal authors are very influential in their field
Intuitive Knowledge

• the ability to think without thinking

• “intuition is nothing but the outcome of earlier intellectual experience” Albert Einstein

• intuition is a component of critical thinking

• part of what makes a good health care professional
Empirical Knowledge

- the idea that all knowledge comes from experience
- we believe in what we can see or experience
- foundational in scientific and traditional knowledge
Rational Reasoning

• Rationalism – a philosophy in which reason is regarded as the chief source and test of knowledge

• Utilises intellectual and deductive reasoning

• Utilises mathematical models and science
Scientific Knowledge

- The observation, identification, description, experimental investigation and theoretical explanation of phenomena.
- Systematically developed using scientific research method
- Accepted as more accurate than other forms of knowledge (consensus based)

**Free Scientific Data Bases**

- [www.freefullpdf.com](http://www.freefullpdf.com)
- [www.tripdatabase.com](http://www.tripdatabase.com)
Scientific Method and Hypothesis
Scientific Method

- Scientific method is the most often used way, in the West, for testing ideas and finding evidence for most likely reality from amongst beliefs, etc.

- It is a logical and rational order of steps to organise thoughts and procedures so answers can be most confidently identified.

- The scientific method is built upon many important precursors such as Egyptian, Greek and Arab understandings of mathematics, alchemy.

- However, the origin of modern scientific method occurred in Europe in the 1600s.
Underpinning Principles

- **Skepticism**: Any proposition or statement is open to doubt and analysis

- **Determinism**: Events occur according to regular laws of cause and effect

- **Empiricism**: Enquiry should be conducted through observation and verified through experience
Doubt in Science

• Doubt drives the scientific method and research to create better hypotheses and better experimental procedures

• Rather than prove that something is true scientific method tries to prove that the opposite, the null hypothesis \((H_0)\) is untrue or can be rejected
Scientific Method

1. Starts with **Observation**
2. We then come up with an idea or **hypothesis**, that is consistent with what you have observed
3. We make **predictions** based on our idea
4. We then test by **experiments** or further observations
5. We may need to adjust our hypothesis and retest
Translational Medicine

- No matter how good a research method is the results are only valuable to the extent that they are incorporated into practice.
- It is preferable to talk about “evaluating the strength of evidence around a particular issue” rather than proving or disproving a hypothesis.
Scientific Method in the Real World

How often do we hear phrases like “latest scientific research proves…” in the media?

- AS CM practitioners it is important to be able to distinguish a well polished story from a well researched study and that you become proficient at telling the difference.

- Consider the popularity of the green smoothie in the context of the following discussion about spinach.
Hypothesis

- Hypothesis - This word basically means "a possible solution to a problem, based on knowledge and research"

- The hypothesis is a simple statement that defines what is thought will be the outcome of the experiment

- It takes a topic question and gives it a direction

- Question - Does spinach consumption affect health?

- Hypothesis – Frequent spinach consumption improves health outcomes
Spinach and the Science Of Popular Beliefs

**Hypothesis:** Frequent spinach consumption improves health outcomes
Spinach and the Science Of Popular Beliefs

- 1870: Dr Von Wolf publishes a study claiming spinach has ten times the iron of other vegetables
- 1929: Popeye is born
- 1937: Scientists publicise Von Wolf’s mistake
- Early 1990s: scientists publish the following

“All though much lauded as a nutritional vegetable, spinach has a drawback in that, while containing high levels of iron and calcium, the rate of absorption is almost nil. The oxalic acid binds calcium into an insoluble salt (calcium oxalate), which cannot be absorbed by the body. The same applies to the iron, as it is bound, leaving only 2-5% of the seemingly plentiful supply actually available for absorption.”

Spinach and the Science Of Popular Beliefs

- So spinach is not particularly high in iron or calcium compared to other dark green vegetables and only 2-5% of what is available can be absorbed by the body.

- Popeye is easy to remember, but the complex relationship between spinach and oxalic acids and absorption is difficult to remember and so the myth lives on.
David Sackett and the Evolution of Evidence Based Medicine
Epidemiology

- EBM grew out of clinical epidemiology

- Epidemiology is the Study of Population Health
  
  the study of distribution and cause of disease and illness at a population level

“Epidemiology is the study of the distribution and determinants of health-related states or events (including disease), and the application of this study to the control of diseases and other health problems.”

(WHO)
From Epidemiology to EBM

• In 1967 David Sackett became the first head of department of the clinical epidemiology in North America

• Epidemiology provides a systematized, scientific approach to the practice of medicine

• 1981 publishes about a new technique for reading medical literature called “critical appraisal”
Evidence Based Medicine

EBM: A Patient Care Model

"the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research."

David Sackett, 1996
EBM Today

• Increased emphasis on patient centricity

• The need to acknowledge the social and cultural factors that affect the health-care encounter

• Criticism that the methods prioritised in EBM (Randomised Controlled Trials) strip away context and ignore the multiple, complex and interacting determinants of health
EBM and Authoritative Knowledge

• David Sackett stopped working in the area of EBM – expertise stifles discussion

• David Sackett on the role of the expert:

  15 min., https://www.youtube.com/watch?v=Nbd--s2dFY0

• However, EBM is alive and well and vital to good clinical practice
Importance of EBM

Evidence Based Medicine gives us a framework for evaluating the quality of evidence and for evidence informed practice.

Before advising to patients, we should always check:

- Is the information from a reliable source?
- Has the research on it been done well?
- Are the research results statistically significant?
From Evidence Based Medicine to Evidence Based Practice (EBP)

- Clinical practice is as much an art as it is a science, and as much a dialogue as it is an application of empirical findings to clients’ unique characteristics and context.

- Practical wisdom is appropriate to it rather than strictly scientific rationality.

- EBP is informed by EBM: EBP is about medicine based on best practice policies and guidelines.

- EBP is an interdisciplinary approach to patient care and treatment that started in medicine as evidence-based medicine (EBM).
Evidence Based Practice to Evidence Informed Practice (EIP)

Individual clinical expertise:

- EPB recognises that research evidence alone is not sufficient for addressing the complex nature of professional practice

- Clinical or professional expertise and experience is central in the translation of research into a practice context

- Expertise develops as an individual gains greater knowledge, understanding and mastery in their practice.
What you should know

• Recognise that there are a number of different types of knowledge

• Have an understanding of the scientific method

• Know about the evolution of EBM and its connection to practice
Review: Activity

Imagine that your clients is suffering from chronic subclinical anaemia.

Taking into account everything that you have learnt about spinach in this session, please answer the following questions:

- What would be the EBP for using spinach as a source of iron?
- What would you tell to the client about eating spinach?
Preparing for Assignment 1
10% Due week 4

1. Stay up to date with course content

2. Learn to paraphrase – say things in your own words. Could you explain to someone what the term evidence based medicine means?

3. Learn where can you find traditional sources

4. It asks you to write short answer responses.
Next Session

• Health literacy literature sources and publications

• Library Tutorial – researching and paraphrasing (preparation for assignment 1)

**Online students** please refer to Libguides on LMS and the following video on APA referencing:
https://www.youtube.com/watch?v=KE3iX7XFses&list=PLmwxbi-R4j_qA2Y2YBYbkUzsN-v7aU_wm&index=13
For next week please read

Chapter 2: “Searching the literature”

of the textbook:

Discussion Forum question
session 3

Please post your answers in discussions forum for session 3 on LMS. Due date for this post is 11.55 pm on Sunday following session 3.

• Think of a popular belief about certain food or behaviour and how is it affecting health (think of Popeye: spinach and strength, or smoking and cancer).

• Share your example on the Discussion Forum and answer the following questions:
  - Do you think this belief is true or it’s just a myth?
  - Do you know any scientific evidence to support your opinion? (you can try to reference it, but lack of reference won't impact your mark)