Clinical practice and is expected to be evidence-based and regularly reviewed. Thus, research is a core component of clinician’s roles. Clinical research encompasses a range of research-related activities that reflect research knowledge and competence. There are a number of barriers to research in addition to lack of knowledge that affect clinicians’ capacity to engage in research. In addition, there are significant ethical issues to be considered including research participant’s vulnerability and their capacity to provide informed consent, which may be temporarily or permanently impaired, as well as the researcher's dual role as a clinician and a researcher.

Introduction

‘Honor tradition’ the mentors said forgetting that, if tradition can preserve wisdom, it can also preserve error and folly.

Then a breeze that had been blowing for years stirred the dust in hospital corridors and nurses listened to the voices borne on the winds and suddenly it was all up with the old system.

‘I am science’ said the voices’
‘I make no claim to infallibility’

A new era began and one could no longer defend tradition by saying ‘but we have always done it this way.’

The scientific method became fashionable—nurses must observe, experiment, theorise, confirm and refute. (Graduation address Dr B Eggins 1969)

Dr Eggin’s, a local general practitioner in the northern NSW country town where I trained as a nurse, gave the occasional address at my graduation. His words have long been an inspiration to me. It is essential to constantly reflect on and question the things we do and the way we feel, to achieve progress and innovation and thus, good clinical care. Observing, theorising, confirming or refuting, are key aspects of good clinical care, and often occur subconsciously as part of reflection in and on practice. Such a process represents a largely unrecognised link between research and clinical care.
Significantly, there is an expectation that clinical care and the policies, procedures and guidelines clinicians use to guide care, are evidence-based and regularly revised to incorporate new evidence and remove outdated traditional ways of providing care. Implementing and evaluating guidelines is a form of translational research.

Evidence-based practice refers to the ‘conscious, explicit and judicious use of current best evidence to make decisions about the health care of patients.’ It integrates clinical expertise and patient values with the best available evidence (Sackett et al. 1996). Thus, research is an essential part of a clinician’s role, and, given the focus on evidence-based care, may be a duty of care.

**Clinical environments**

Clinicians practice in a diverse range of environments in public and private sectors such as hospitals, communities, general practice, home-based care, and aged care. Many settings are challenging and require fast paced, technological care such as intensive care and operating rooms. Clinicians handle body tissues and fluids in clinical and laboratory settings and need to be cognisant of the risks of chemical and biological hazards and handling sharp objects such as syringes and occupational health and safety procedures.

The term ‘clinician’ encompasses a number of different professional disciplines: e.g. doctors, nurses and allied health practitioners. In addition, most disciplines have specialist practitioner groups e.g. cardiologists and diabetes nurse educators. Many of the skills clinicians use on a day-to-day basis are applicable to research. Likewise, a lot of the data they collect can be used in audit and evaluation research. The clinical skills include:

- physical assessment
- collecting data including questioning, listening and counselling
- documenting data.

**Defining research**

There are many definitions of research. In its broadest sense, the term ‘research’ refers to ways of knowing, practising in, and contributing to an environment of research awareness (Dunning 2010). Smith (1929) stated:

Research is fundamentally a state of mind involving continual re-examination of the doctrines and axioms upon which current thoughts and actions are based. Therefore, research is critical of existing problems. Research involves continual re-examination of the doctrines and axioms upon which current thought and action are based. It is therefore, critical of existing practices (*Smith 1929 p 24*).

Although this is an old reference, the sentiments still apply to modern research. The statement encompasses key aspects of research such as the fact that research is a continual process of investigating and re-investigating problems and questioning existing practices that enable progress and innovation.

Clinical research activities fall into two broad categories: using research and generating research. The categories and subcategories are:
1. Using research
   a. Being a discerning research consumer, which includes asking questions, reading research and understanding the research process and the contribution the different research methods make to clinical care in order to effectively critique research publications. That is, understanding what ‘good research’ is.
   b. Applying relevant research findings in clinical care and education to achieve evidence based care including developing evidence-based policies and procedures and monitoring the outcome/s, which is part of the research cycle.
   c. Participating in, responding to, or being a subject in research (depending on the data collection method).

2. Generating research
   a. Leading research teams to undertake and/or collaborate in research to generate data that can be applied in care or to evaluate the outcome of or impact on care. This level encompasses training and mentoring beginning researchers (Dunning 2010).

These categories indicate the increasing complexity of research activities, suggest the knowledge and competence needed to engage in the various activities and can be used as a framework to plan professional development activities to enhance research skills.

Significantly, many clinicians do not consider themselves to be researchers and cite common barriers to participating in research (Funk et al. 1991; Happell et al. 2003; Dunning 2006) see table 1. Most of these barriers appear to concern ‘doing research’ rather than the broader perspective of research proposed in this paper.

Employing organisations could help address some of the barriers to research by actively supporting clinician’s research endeavours. For example, enabling clinicians to allocate specific time to undertake research activities and recognising and rewarding research efforts. In addition, they could provide the infrastructure to support research activities, which would develop a workforce that actively engages in research and contributes to evidence-based care.
Table 1
Some barriers to undertaking research. The barriers are common to all clinician disciplines. Some barriers are difficult for individual clinicians to change; others can be overcome if clinicians adopt a proactive approach to seeking research opportunities and developing the relevant skills.

<table>
<thead>
<tr>
<th>Insufficient time due to clinical load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insufficient resources such as funding, infrastructure and access to a statistician</td>
</tr>
<tr>
<td>Insufficient knowledge and skills</td>
</tr>
<tr>
<td>Ethics processes</td>
</tr>
<tr>
<td>Difficulty accessing research mentors</td>
</tr>
<tr>
<td>Thinking of research as ‘doing’ research rather than engaging in research.</td>
</tr>
<tr>
<td>Lack of organisational/employer support</td>
</tr>
<tr>
<td>Short term contracts to collect data in other people’s research projects and often do not feel part of the team</td>
</tr>
<tr>
<td>Research efforts not recognised or rewarded.</td>
</tr>
</tbody>
</table>

Research engagement

A number of stakeholders are involved in or influence clinical research:

- clinicians e.g. doctors, nurses, allied health practitioners
- employing organizations e.g. health services, universities
- funding bodies e.g. pharmaceutical companies, NHMRC, ARC, philanthropic trusts, professional associations
- research participants e.g. patients, colleagues.

Table 2 outlines some of the research-related factors relevant to each stakeholder group.
Table 2
Outline of the relationship between research and the main stakeholders concerned with clinical research. All stakeholders expect research to be conducted according to ethical principles.

<table>
<thead>
<tr>
<th>Clinicians</th>
<th>Employing organisations</th>
<th>Expectations of academic</th>
<th>Funding bodies</th>
<th>Research participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component of all clinical role to some degree.</td>
<td>Support claim delivering evidence-based care and help them meet accreditation standards.</td>
<td>Expect clinicians with an academic component to their role to be research active.</td>
<td>Want value for money.</td>
<td>Expect care to be evidence-based as well as delivered using the ‘art of care.’</td>
</tr>
<tr>
<td>Demonstrate the value of their work and justify expenditure or obtain funding for clinical services.</td>
<td>Reduce the likelihood of litigation or help them defend against it if necessary.</td>
<td>Develop a program research and teaching in collaboration with clinical agencies.</td>
<td>Want quality, credible data to support introducing new products, models and medicines.</td>
<td>Want information about research that is relevant to them.</td>
</tr>
<tr>
<td>Balance competing demands: clinical care and research.</td>
<td>Make or justify cost saving practices or spending.</td>
<td>Develop a track record and benchmark against other like academic institutions.</td>
<td>Some want to use the findings in marketing strategies.</td>
<td>Want the opportunity to participate in research to help other people.</td>
</tr>
<tr>
<td>Health consumers are increasingly well informed and aware of research.</td>
<td>Benchmark against other similar organisations.</td>
<td>Secure research grants that contribute QANTUM and status.</td>
<td>Some expect researchers to present their results at conferences and education sessions they host for other clinicians.</td>
<td>What summaries of the research projects they participate in.</td>
</tr>
<tr>
<td>Research supports clinical decision-making.</td>
<td>Develop policies and procedures.</td>
<td>Publish and present research findings in relevant high profile avenues.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinicians implement a great deal of research, thus clinicians and research are agents of change.</td>
<td>Market their organisation and Generate income.</td>
<td></td>
<td></td>
<td>Build prestige.</td>
</tr>
</tbody>
</table>
The Yin Yang Research Continuum—an holistic model

Commonly used research methods are shown on Table 3, and figure 1 depicts the Yin Yang Research Continuum (Dunning 2010).

Table 3
Examples of some research methods clinicians commonly use.

<table>
<thead>
<tr>
<th>Quantitative</th>
<th>Qualitative</th>
<th>Evaluation</th>
<th>Audit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randomised controlled trials:</td>
<td>Grounded theory</td>
<td>Utility</td>
<td>Performance such as waiting times, falls</td>
</tr>
<tr>
<td>blinded and unblended</td>
<td></td>
<td></td>
<td>rates, pressure injury</td>
</tr>
<tr>
<td>Case controlled studies</td>
<td>Phenomenology</td>
<td>Performance</td>
<td></td>
</tr>
<tr>
<td>Epidemiological studies</td>
<td>Hermeneutics</td>
<td>Clinical relevance</td>
<td></td>
</tr>
<tr>
<td>Cost benefit/effectiveness</td>
<td>Focus groups</td>
<td>Usability and applicability</td>
<td></td>
</tr>
<tr>
<td>Service delivery</td>
<td>Surveys</td>
<td>Outcomes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Impact</td>
<td></td>
</tr>
</tbody>
</table>

Clinicians use a range of data collection methods relevant to the research question/s. Like research in other disciplines, data collection instruments and methods need to be valid, reliable and precise. Significantly, the researcher is also a data collection instrument, especially in qualitative research, and we need to measure their performance as ‘an instrument’ in some way (Dunning 2010).

Nurses often use questionnaires, observations and focus groups in qualitative studies. Doctors often undertake randomised controlled trials (RCT) and collect blood, tissues samples and other physical data. However, doctors also undertake qualitative studies and nurses undertake RCTs. Increasingly methods are combined in triangulated or mixed method methodologies.
The yin yang research model

**Figure 1:** The figure depicts the Yin Yang Research Continuum (Dunning 2010).

**Ethical issues**

Undertaking research in clinical areas creates a range of ethical questions that need to be carefully considered. These include:

- The clinician’s duty of care and potential coercion, duality of interest (researcher-clinician dyad).
- Power relations that could be involved. There is a focus on patient-centred care and the patient as partner in care decisions that can extend to participation in research.
- Incentives to recruit participants into research but also to entice researchers to espouse research findings or undertake research.
- Vulnerability.
- Informed consent.
- Safety, benefit and risk.
- Privacy and confidentiality, which encompasses data security.
- Researcher well being and safety.
- Conducting good quality research and interpreting the findings and reporting them honestly acknowledging the limitations.
Good quality research:

- Gives information about the context of the study (literature review, contextual framework, definition of terms).
- Clearly articulates the research question.
- Uses an appropriate method to answer the question—different research questions address different aspects of ‘the truth.’
- Ensures rigor by appropriately controlling bias.
- Accurately reports the findings and makes conclusions relevant to the research question.
- Acknowledges limitations and conflicts of interest.
- Is conducted according to ethical principles.
- Is accurately reported.

Summary

Clinical research is exciting, frustrating and challenging. It concerns all clinicians but they engage in research at different levels according to their knowledge, skills and opportunity. Essentially research is a journey of discovery—about the research question and about the researcher him or herself. The source of the following figure is unknown; I found it in a research laboratory. There is much truth in humour and many a researcher will recognise the tortuous path depicted in the Island of Research.
References


National Health and Medical Research Council (NHMRC)
