Braithwaite and Associates

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Options for change in health care

Inter-professional learning and clinical education: an overview of the literature

A project for ACT Health conducted by Braithwaite and Associates, an Australian consulting practice providing Options for Change in Health Care.

Inter-professional learning and clinical education: an overview of the literature.

Duration of project

August-December 2005

Search period

1892 to 18th August 2005

Key words searched

Words and phrases related to 'inter-professional learning' and 'clinical placement'

Databases searched

- Medline from 1966 to August Week 2 2005
- Embase: Excerpta Medica from 1988 Week 33 2005
- CINAHL from 1982 to August Week 2 2005
- Emerald Fulltext from commencement of the database
- Science Direct from 1967
- PsycINFO from 1892

Criteria applied

We searched for the key terms as listed. Documents were largely limited to English.

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1. Introduction

1.1 Overview

In what follows we summarise a wide range of articles related to inter-professional learning we uncovered using the search strategy outlined. Literature from 1892 to the present was searched using mainly health databases and the key concepts relating to inter-professional learning and clinical education. This document will have utility for everyone in ACT Health who either wants to get an overview of the field of multidisciplinary clinical education, or who wishes to explore a more specific topic in the area of inter-professional learning or collaboration. It has been prepared for ACT Health as part of a project designed to enhance inter-professional learning and clinical education. Links to full text articles are available on request from the authors.

1.2 Background

It is clear that with the increase in the complexity of health treatments and services[1-3] in developed countries comes an increased complexity in the relationships of those who are to provide them.[4] Health professionals are required to negotiate within and across an intricate web of professional relationships which have potential to affect the health outcomes and safety of patients. Within this context the development of a professional's ability to collaborate effectively across occupational and discipline groups becomes increasingly important. In virtually every major inquiry into breakdowns of patient safety across the English-speaking world, the issues of communication between professional groups and integrated service provision have been raised as important factors.[5]

Inter-professional and multidisciplinary learning have been features of the health professions literature since at least the 1960s.[6] Several recent international reports, including the Institute of Medicine's *Health professions education: a bridge to quality*[7] and the report of the Pew Commission,[8] argue both for the importance of inter-professional teams to the quality of health care, and the need to train health professionals to work effectively in such teams.

Definitions of inter-professional and multidisciplinary clinical education and learning vary, although most of the key elements remain the same. Zwarenstein *et al.* (2000) define inter-professional learning as being "*… any type of educational, training or teaching initiative involving more than one profession in joint, active learning*".[9:2] The Centre for Interprofessional Education and Research[10] at St Louis University (2005) describe inter-professional practice as *"… the … interdependent use of shared expertise directed toward a unified purpose of delivering optimal patient*

care". They define inter-professional education as *"… the process of developing the knowledge, attitudes, and skills needed for interdisciplinary health care practice".* The definition from the UK Centre for the Advancement of Interprofessional Education (CAIPE) (1997) concentrates equally on process and outcome, arguing that the inter-professional education occurs when two or more professions "… *learn from and about each other to improve collaboration and the quality of care."*[11] Health Canada's (2004) definition highlights the intended purpose of this approach to education and practice, that is that it should *"… enhance patient-, family-, and community-centred goals and values, [provide] mechanisms for continuous communication among health care providers, [optimize] staff participation in clinical decision making (within and across disciplines), and [foster] respect for the contributions of all providers.*"[12]

The authors of this report have taken these definitions as the starting point for the analysis of the articles reviewed. We have settled on a definition: *"a collaborative, interdisciplinary education and learning process designed to produce effective, multidisciplinary patient centred care."*

1.3 A note on terminology

As is evidenced by the search terms utilised below, this field is bounded by a range of inter-related terms. They are often used interchangeably.[13] Two major categories apply: 'inter' which often refers to situations where two or more groups (e.g. doctors and nurses) work together and learn from and about each other; and 'multi' (or at times 'cross') where three or more groups are involved. At its simplest it means a range of professionals treating patients. 'Multi', as Macintosh and McCormack (2001) point out, is also used to refer to a group which is working towards the same goal, but independently.[14] They add another prefix to the mix, the term 'intra' which they argue implies professionals from the same discipline, but different contexts, working together on a common goal (e.g. public health and school nurses working together on a health promotion project). The 'trans' prefix is beginning to be used by those who argue that rather than learning to mesh what is already known and done together, genuine inter-professional learning and practice is about creating an entirely new framework or method of operation.[15] [16] Clark (1993) provides a similar typology of inter-professional education, moving from 'uni-disciplinary', through multidisciplinary (in the same sense as Macintosh and McCormack) to genuinely 'interdisciplinary' (or inter-professional) where the process of learning is as important as the content.[17]

Attached to any or all of these prefixes are a range of possible suffixes. Most commonly, terms such as disciplinary, professional, sector and agency. These terms serve to indicate the

organisational and expert boundaries that are traversed by many health professionals.[18]

Learning and education are also key terms utilised in this document. Definitions of both vary, but a definition of learning is a sustained change in behaviour.[19-22] Education encompasses those activities and strategies which assist people to make such changes.[23 24] The process of education can take place as a formal, informal or incidental process,[25-28] and in a variety of educational, workplace or community settings.[29-31]

Whenever possible we use the words ‘patient’ and ‘client’ accurately; ‘patient’ is used most often in acute settings and ‘client’ in community settings. In all cases we mean the person who is the recipient of professional health services.

Bloom theorised that learning can occur in three domains: cognitive (knowledge), affective (attitudes), and psycho-motor (skills).[32 33] These three elements provide the basis for most standardised competencies. D’Eon (2005)[34] points out that a fourth element – social/relational, identified by Mackway-Jones and Walker (1999),[35] which is particularly relevant to understanding inter-professional practice. In a broader context, concepts such as ‘emotional competence’ or intelligence[36 37] provide a similar perspective on this fourth dimension. In addition some newer, more holistic, theories of adult learning and education also appear promising for inter-professional learning. These include; lifelong learning,[38 39] learning organisations,[40 41] experiential learning, [42 43] reflective practice,[44 45-47] communities of practice[48 49] transformative education[50-52] problem based learning[53 54] and computer based learning.[55]

1.4 Objectives

Against this background and in the context of these definitions, the objectives of this report are to:

1. Examine key concerns and debates addressed in the literature on inter-professional learning,
2. Determine what and how inter-professional learning is currently being conducted; and
3. Identify evidence for the effectiveness of inter-professional learning and its impact on patient outcomes.

2. Methods

2.1 Overview

In conducting a review of the literature on inter-professionalism the researchers were bounded by a number of issues. The first, as noted in section 2.3 below, was the issue of the term 'inter-professional' and its synonyms. This is invariably clear when authors are referring to doctors and nurses. However, the term "allied health" needs to be broken down into each component profession, in order that a comprehensive assessment of the literature can be made. Importantly, and as will be reiterated later, there is a lack of first level evidence on the impact and or effectiveness of either inter-professional education or practice. This said, however, the search strategy uncovered 62,436 references which we subsequently analysed.

2.2 Review questions

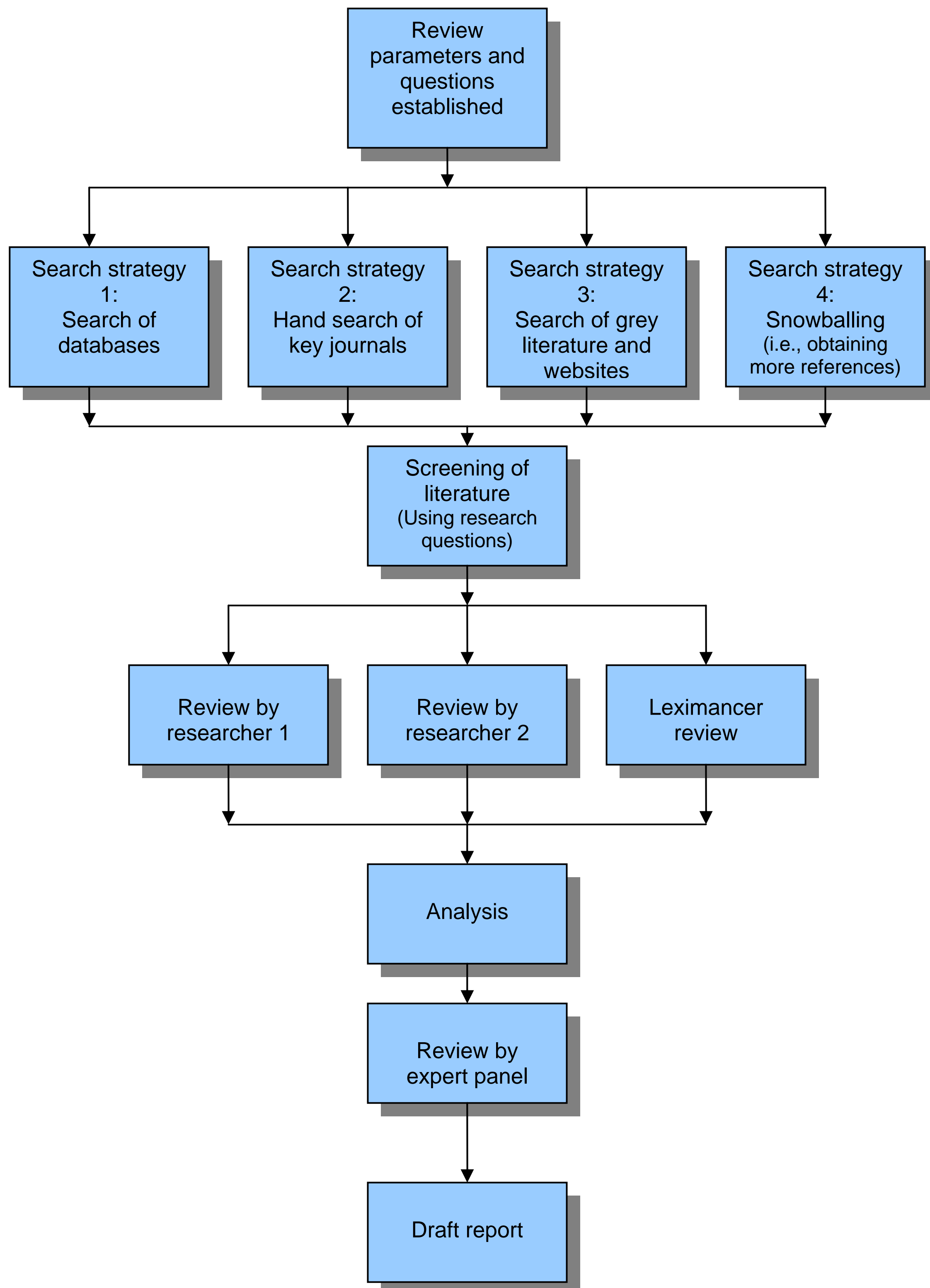
The review questions were formulated by researchers based on the brief provided by ACT Health. The questions directed the search and analysis process, although the results have been synthesised in this report as some questions yielded few references (for example, very little explicit material was available on the competencies required for inter-professional practice). The questions are provided below.

1. What is inter-professionalism?
2. What perceived benefits have been associated with inter-professionalism?
3. How is inter-professionalism governed in the health system?
4. What competencies are required for inter-professional learning and practice?
5. What is the rationale for inter-professional learning and education?
6. What models for inter-professional education exist?

2.3 The Review process

Figure 1 provides a schematic diagram of the review process. It shows how four distinct search strategies and three methods were used to conduct the analysis of the literature.

Figure 1: The review process



2.4 Search strategies

2.4.1 Search strategy 1: search of databases

Databases were systematically searched to find published literature. The databases searched included Cinhal (allied health), Medline (medicine), Embase (medicine), PsychLit (psychology), and Social Work Abstracts (social work). The searches were conducted in August 2005. References with abstracts were downloaded to Endnote version 9.0, a software package.

With the systematic reviews, the two authors independently reviewed the relevance of references, identified key articles, and qualitatively analysed their results. The search terms were as follows (Table 1). “$” is used for truncation in the databases searched. “Exp” refers to a MESH term which has been “exploded” for the widest possible capture of the term.

Table 1: Search terms

1.	Inter-profession$ or interprofession$
2.	Inter-disciplin$ or interdisciplin$
3.	Inter-occupation$ or interoccupation$
4.	Inter-institut$ or interinstitut$
5.	Inter-agen$ or interagen$
6.	Inter-department$ or interdepartment$
7.	Inter-sector$ or intersector$
8.	Inter-organisation$ or interorganisation$
9.	Inter-organization$ or interorganization$
10.	exp Interprofessional relations
11.	Multi-profession$ or multiprofession$
12.	Multi-agenc$ or multiagenc$
13.	Multi-disciplin$ or multidisciplin$
14.	Multi-institut$ or multiinstitut$
15.	Multi-sector$ or multisector$
16.	Multi-organisation$ or multi-organisation$
17.	Multi-organization$ or multi-organization$
18.	Team$
19.	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18
20.	Education$ or train$ or learn$ or teach$ or course$
21.	exp Education, continuing
22.	exp Education, graduate
23.	exp Education, clinical
24.	Clinical placement
25.	#20 or #21 or #22 or #23 or # 24
26.	#9 and #25
27.	Limit #26 to English

2.4.2 Search strategy 2: hand search of journals

Hand searches, using the search terms in Table 1, were conducted of key journals. The journals were selected partly because of the frequency with which they published articles on inter-professional

practice and education, and partly because the articles they published were referred to frequently by (more than 10) other articles. A third determining factor, given the time constraint, was the availability of the journals to the researchers. A final factor was the need to identify articles relating, in particular, to the individual professions of allied health. The journals which were systematically searched included:

- Academic Medicine
- Education for Health
- Journal of Advanced Nursing
- Journal of Allied Health
- Journal of Interprofessional Care
- Learning in Health and Social Care
- Medical Teacher.

2.4.3 Search strategy 3: grey literature and websites

Grey literature such as unpublished reports, policy documents, statements, strategies and frameworks relating to workforce, training, and education, and un-reviewed conference papers were assessed. Search terms used in Table 1 formed the basis of the search, but additional terms (notably workforce development, organisation and organisational learning) were included in search strategy 3.

Firstly, references to grey literature in published articles were followed up. If they appeared in several (more than five articles) they were pursued.

The second source of material came from websites of universities and colleges, professional bodies and associations, health services and departments, research centres and institutes, and individual researchers and academics. Selection of material was limited to English speaking documents, to ensure the ability of researchers to review the information, but a number of websites from non-English speaking countries were searched.

Key websites searched included:

- Australian Department of Health & Ageing
- Australian Institute of Health and Welfare
- Centre for the Advancement of Interprofessional Education, United Kingdom
- Clinical Leaders Association of New Zealand (CLANZ)
- Common Learning Website, Universities of Southampton and Portsmouth
- Dalhousie University, Canada, Interprofessional Learning Website

- Health Canada
- Health Care Innovation Unit, University of Southampton
- Homerton School of Health Studies and University of Cambridge Interprofessional Learning Portal
- National Institute for Clinical Studies (Australia)
- New Zealand Health Workforce Committee
- PIPE (Promoting Inter Professional Education) Project Website
- State Government of Victoria, Department of Human Services
- The Higher Education Academy, Health Sciences and Practice
- University of British Columbia
- University of Durham
- University of Minnesota, Interprofessional Education Resource Centre
- University of Melbourne, Rural Interprofessional Education Project
- University of Newcastle, Multiprofessional Education Website
- University of Toronto, Team Work Your Future in Healthcare Website
- Department of Health, United Kingdom
- National Health Service, United Kingdom
- World Health Organization.

The third source of material came from jurisdictions in Australia. We wrote to the Directors-General of all States and Territories on the 29 August 2005 and included all materials they had generated in this literature review. A separate report, *Inter-professional learning and clinical education: a review of initiatives in Australian jurisdictions,* summarises these materials.

2.4.4 Search strategy 4: snowballing

Snowballing is a search technique whereby references cited frequently in literature already known are identified and included in the collection. Snowballing was used two ways. Firstly, references in key articles (articles that were cited more than five times) were followed up wherever possible. Secondly, internet searches, using the key terms identified above, were conducted on PubMed, Scirus, Teoma, Google and Google Scholar. Google Scholar was used most extensively because it has a “cited by” function, and the references which had cited key references were also followed through by the researchers.

2.5 Analysis

2.5.1 Triangulated reviewer analysis

Two researchers (Jo Travaglia and Jeffrey Braithwaite) jointly analysed these abstracts and citations and categorised them using a grounded process. We sought to determine the categories which were clearly represented in the literature.

In this first instance, the articles were reviewed and thematic coding undertaken, to identify key categories. Using this method, the researchers identified four over arching-categories: the value, governance and context of inter-professional learning; inter-professional practice; inter-professional relations; and clinical education and placements. These are referred to as RI categories, which means that they were researcher-identified. These were then further coded to identify any additional categories, and to refine and merge any smaller categories. Through this process the researchers identified an additional four sub-categories: rationale for inter-professional learning and clinical education; competencies for inter-professional practice; interprofessional teams and undergraduate and postgraduate education; and inter-professional learning and environments.

These categories were then reviewed by the inter-professional learning project reference group, constituted as an expert panel, which added five additional categories: the economic cost benefit of inter-professional practice; governance and inter-professional practice; transferring theory into practice; the client and inter-professional practice; and professional identity and inter-professionals. We refer to these as expert identified or EI categories. We have synthesised these into four main headings and a range of sub-headings (Table 2).

Table 2: Categories and sub categories of literature

The value, governance and context of inter-professional learning and practice

- Rationale for inter-professionalism
- Benefits of inter-professionalism
- Governance and inter-professionalism
- The client and inter-professionalism

Inter-professional practice

- Competencies for inter-professional practice
- Translating theory into practice

Inter-professional relations

- Professional identity and inter-professional practice
- Collaboration

- Inter-professional teams

Clinical education and placements

- Development of clinical education
- Undergraduate and postgraduate education and curricula
- Clinical placements
- Educational approaches to inter-professional learning

2.5.2 Leximancer analysis

Once the researchers had completed their analysis and coding of the literature, a Leximancer analysis was conducted. The Leximancer program, which has recently been developed by Dr Andrew Smith of the University of Queensland, assists researchers to analyse large collections of text data. It does so by constructing a map, a thesaurus and a ranked concept list of key concepts held within the data. The program goes beyond simple word counts, providing a relational schemata of key concepts (that is, ideas that occur in relation to other ideas), their relative sizes (frequency of occurrence) and the strength of relationships between them (frequency of occurrence in association with other concepts). Concepts are shown as points or dots on a map – the size of the points depicting their frequency of occurrence. The location and grouping of these points give indications of the co-location of concepts in the data, that is, if they are located close to each other on the map, they are co-located in the document.

The use of Leximancer has allowed the authors meaningfully to manage the literature data set collected. Because of the extensive search strategy, many documents made it into the final analysis. Through the Leximancer analysis, readers are able to see the 'lie of the land' in relation to this topic. Moreover, because the generation of concepts and maps are independent of researchers, individual researcher bias does not influence the selection of concepts. Most importantly, because Leximancer is fully automated, it provides both a method of triangulation and a verification of the results.

2.6. Refining the data base

We identified a large and varied body of literature on inter-professional learning and clinical education. This literature covers undergraduate, postgraduate, and clinical education, training and learning. Table 3 presents the numeric results of this search.

Table 3: Search results

Search term	Database results: numbers of articles				
	CIN HAL	**EM BASE**	**MED LINE**	**PSYCH LIT**	**SW ABS**
1. Inter-profession$ or interprofession$	4592	482	29620	529	84

2.	Inter-disciplin$ or interdisciplin$	3501	6136	10647	10494	489
3.	Inter-occupation$ or interoccupation$	2	0	1	13	1
4.	Inter-institut$ or interinstitut$	2631	246	6301	76	9
5.	Inter-agen$ or interagen$	309	454	678	724	144
6.	Inter-department$ or interdepartment$	312	141	1410	128	6
7.	Inter-sector$ or intersector$	108	254	334	69	2
8.	Inter-organisation$ or interorganisation$	8	23	15	15	1
9.	Inter-organization$ or interorganization$	17	30	45	106	7
10.	Multi-profession$ or multiprofession$	6601	852	31551	0	0
11.	Multi-agenc$ or multiagenc$	351	393	514	191	6
12.	Interprofessional relations	165	129	196	228	16
13.	Multi-disciplin$ or multidisciplin$	11804	13527	17655	6144	283
14.	Multi-institut$ or multiinstitut$	649	1523	7624	44	2
15.	Multi-sector$ or multisector$	53	157	232	40	3
16.	Multi-organisation$ or multi-organisation$	4	3	1	0	0
17.	Multi-organization$ or multi-organization$	8	3	15	15	1
18.	Team$	21904	25906	67660	21478	1013
19.	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18	35129	44379	126107	34758	1604
20.	Education$ or train$ or learn$ or teach$ or course$	207341	563698	866721	546723	13152
21.	Education, continuing	8214	11315	38447	0	0
22.	Education, graduate	3890	9613	21289	0	0
23.	Education, clinical	4098	4486	0	334	9
24.	Clinical placement	433	52	135	36	1
25.	#20 or #21 or #22 or #23 or # 24	207899	567096	866746	546730	13152
26.	#9 and #25	11310	13829	31041	13286	697
27.	Limit #26 to English	10987	11690	26605	12457	697

A total of 62,436 references was downloaded. Once duplicates were removed, 52,752 references remained. Removal of incomplete references, opinion pieces, and references prior to 1990 with little relevance to the project, left 37,812 references.

A secondary refining process was then conducted. This review removed articles that were: incomplete; involved no professional collaboration; duplicates that had not previously been removed; related to veterinary science; opinion pieces; not directly related to inter-professional learning or clinical education. In this final category two major exclusion processes were invoked. The first was where inter-professional learning or practice was peripheral to the discussion of the paper, for example where a multidisciplinary team was mentioned as providing a particular intervention, but the paper included no discussion of the collaboration, or the impact or influence of the team's multi or inter-disciplinarity. The second exclusion operated in cases related to the education or learning of patients, i.e. in diabetes education. For example, a team undertaking diabetes education was said to be inter-professional or inter-disciplinary, but, once again, the actual article did not discuss

the way in which the education or collaboration process of the patient was influenced or affected by the inter- or multi-disciplinary of the team. Thus, it was excluded.

Because of the size of the data, and given the scope of the report a two step analysis process was chosen. In the first step, each of the remaining 37,812 references was individually reviewed against the study questions, and a sample of approximately 10% of the total review remained as being most relevant. This refined the usable literature to 3,765 references. Each of these references was read carefully, and sorted into the categories identified in Table 2. We used a grounded theory method[56 57] of analysis, which included comparing and coding data until an emerging pattern was identified.

In order to triangulate results we used a broader strategy for the Leximancer analysis. An Endnote report which we generated from the meta-review, comprised the 37,812 references, contained in a report of 10,945 pages of 10pt text. We submitted this entire database to the Leximancer review. The Leximancer analysis is attached in Appendix A. It includes a map of key concepts, and the relationships between them as well as a chart of these concepts. A separate document of the full set of 37,812 references, entitled: *Inter-professional learning and clinical education 1990-2005: an annotated list of the literature,* has also been compiled.

3. Findings and discussion

3.1 The value, governance and context of inter-professional learning and practice (EI)

3.1.1 Rationale for inter-professionalism (RI)

The concept of inter-professionalism emerged strongly in the United Kingdom and the United States of America in the 1960s[58-60] and 1970s[61-67] although it has been intermittently dealt with in the literature before this.[68-71] The demand for inter-professionalism grew out of another rapid period of workforce change, interest in the contributions of social problems to health, and the rise of the quality improvement movement.[72 6]

In Australia,[73] the United Kingdom,[74] the United States,[8] New Zealand[75] and Canada,[76 77] State and Federal Departments of Health have undertaken reviews each of which recommend inter-professional learning and practice (IPLP). In particular these reports call for: teamwork; new ways of dealing with the increasing complexity of patients and technology; collaboration between professions and between professionals and patients; increases in the skill mix of the workforce; and support for innovative workplace learning strategies.

Inquiries into breakdowns in patient safety have also supported the need for inter-professional education and practice. Calls for improvements in inter-professional collaboration were noted by inquiries as diverse as the Bristol Royal Infirmary Inquiry in the UK (paediatric cardiac surgery),[78] in the Southland District Health Board Inquiry in New Zealand (mental health)[79] and King Edward Memorial Hospital (gynaecology and obstetrics)[80] in Perth, Western Australia. The most important review of patient safety, the Institute of Medicine's *To Err is Human* (2000), recommends that interdisciplinary team training programs, involving simulation, training designed to improve and maintain skills, as well as improve team member communication, be implemented widely by health care services.[81: 14]

3.1.2 Benefits of inter-professionalism (EI)

Interprofessional learning has been said to improve communication and trust between different professions[82] by improving collaborative skills,[83 84] thereby reducing the 'silo' effect between professions,[81 85] enhancing professional relationships[82 86 87] and facilitating more creative and integrative responses to healthcare.[88] Yet as Burgess and Rafferty (2002) [89: 3] note *"… we are only beginning to understand the complexity of this [interprofessional education] as a pedagogic activity, and to develop notions of effective practice."*

Inter-professional learning and education deals with the knowledge, skills and attitudes (that is, competency) required for collaborative practice.[90-92] It provides students with the knowledge of the contribution of other disciplines, the skills to seek out, communicate with and work with other professionals, and the ability to value such contributions.[93-95] Inter-professional teaching is in itself seen as one way of modelling the interdisciplinary skills required of the next generation of health professionals,[90 96] although there are some concerns as to the number of academics who are genuinely able to teach in inter-disciplinary modes.[97] The use of a common curricula across health professions will help in the development of a common worldview including common values, language, and perspectives.[98 99] As the authors of the Health Canada (2004) report on interdisciplinarity argue, *"Changing the way we educate health providers is key to achieving system change and to ensuring that health providers have the necessary knowledge and training to work effectively in interprofessional teams within the evolving health care system."*[12]

While it can be said that there is general support of inter-professional education, there have been some criticisms. For example, educational institutions have expressed reservations about its implementation. In the UK, the Committee of Vice Chancellors and Principals (now Universities UK) argued that respect for the specialist intellectual and practice base of each profession needed to be maintained.[100 101] This type of argument is supported by those who feel that multi-professional education is simply an underhand way reducing educational costs and edging towards the idea of a low cost, interchangeable, 'generic' health worker.[102 103]

Other critics argued that the concept of inter-professional education remains unclear, with multiple definitions and multiple objectives.[104 105] Despite these types of criticisms, in recent submissions to the Australian Productivity Commission's Review of the Health Workforce,[106] many educational, professional and service organisations argued *for* the actual or potential importance of inter-professional learning.[107] The Committee of the Deans of Medical Schools (2005), for example, stated that: *"In its broadest sense, medical and indeed all of health education is still essentially conducted in silos, although there is now a growing recognition that medical education needs to be contextualised within the needs of the health workplace and coordinated across the education/training/practice continuum. In this regard, the growing provision of health care by teams rather than individuals, particularly for the aged and chronically ill, has presented the as yet largely unrealised challenge of interprofessional education and learning."* [108:6]

The most sustained criticism of inter-professional learning and education is the lack of systematic evidence of its effectiveness.[109 110 111] The most comprehensive search of the effectiveness of inter-professional education was conducted as a Cochrane Review. It found there were no studies of inter-professional education which demonstrated that such education had a direct effect on the organisation and care of patients.[9] In this, and another related report, two of the key Cochrane review authors (Zwarenstein and Reeves) argue that while there was no evidence that inter-professional education worked, neither was there evidence that it did not. Their position is that it is difficult to evaluate the effectiveness of undergraduate (or pre-licensure) inter-professional education because: a) large scale changes (e.g., all of school of health) are necessary to implement this type of educational program; b) these types of changes are often led by 'charismatic' individuals and therefore, are difficult to transfer or replicate and c) in order to assess changes in the attitudes and approaches of students and professionals, 'deeper', longitudinal evaluations are required. [109]

In another study, the reviewers loosened the criteria, but still found a lack of strong evidence. Some evidence, however, was found for the effectiveness of post-graduate (or post-licensure) education. The authors state that even though the interventions they reviewed showed *"more reliable evidence of positive impact on health care processes and outcomes"* [109:47] several issues remained. The interventions were usually aimed at a local team (i.e. it remains to be seen if the same approach would work on larger, or more dispersed teams), were not theory based (therefore it is more difficult to evaluate the causal relations), were generally responses to problems perceived by those involved (who, therefore, were already committed to their success), were driven and designed by clinicians (again, they often have specific buy-in), and finally, they generally related to the implementation of a structure, guideline or new way of working, rather than the facilitation of collaborative practice per se. Nonetheless, the authors claimed that in 11 of the 14 studies reviewed, five were able to demonstrate statistically significant differences in patient outcomes, including a reduction in mortality rates.

Overall, the literature on the effectiveness or outcomes of inter-professional education appears largely to focus on self-reported ratings of inter-professional programs or courses[73] at an undergraduate level.[112] Nonetheless, these provide some insight into the effects of such courses. Inter-professional learning based in higher education, for example, had the most positive outcomes in relation to learning experiences, changes in attitudes and skills acquisition, while workplace learning rated positively in relation to changes in the organisation of practice, and effects on patients and clients.[113] Evidence so far seems to suggest that undergraduate

inter-professional learning does seem to have some effect on participants,[114] but there is still no independent systematic evidence as to whether it affects either practice or patients. [114-116]

While the evidence for the impact of postgraduate inter-professional education is stronger, it is still limited. There remains a need for research into a) the benefits of various models and approaches to inter-professional education at undergraduate, postgraduate and continuing education levels; and b) the impact of these programs in the short, medium and long term on patient care and outcomes in different practice settings. Finally, as D'Eon (2005) points out in a recent article, much of the published literature has essentially been a list of 'good ideas', with few attempts to examine the theoretical underpinnings of an inter-professional approach to either learning or practice.[6 34] An examination of the theories, both explicit and implicit, which inform inter-professionalism, is essential if the field is to mature.

3.1.3 Governance and inter-professionalism (EI)

Governing inter-professional learning processes and clinical education is challenging. It involves the leadership of fragmented strategies in education and health settings. Inter-professional learning and clinical education are coordinated by various education providers, colleges, professional associations and agencies, government bodies and instrumentalities, and health provider organisations.[117 118] No one governance model will fit all circumstances and thus any governance response will need to be flexible, and ensure effective co-ordination of efforts across multiple providers, policy domains and funding mechanisms. The keys will be leadership,[97 119] willingness to negotiate,[120] and agreement to a common framework for good governance.

Rapid changes in health systems and workforces over the last decade have had a significant impact on the governance of inter-professional and multidisciplinary practice. In the face of seemingly constant organisational restructuring,[121 122] increased workplace demands and heightened scrutiny as a result of patient safety inquiries,[123 124] staff turnover has increased and retention rates have decreased. In response to these changes, practitioners, managers and educators have sought to find new ways to improve clinical practice and patient outcomes, while at the same time increasing staff satisfaction.[83 12]

As new ways of working have emerged,[125] along with some modifications to professional boundaries and responsibilities, it has become imperative that professionals address the issues of collaboration and teamwork.[126] In particular, the rising complexity of medical interventions[4] as a result in the increase of chronic, complex and multiple morbidities in patients who are living longer,

and becoming sicker,[127 128] all underpin the need for multi-disciplinary interventions.[7] Success of these interventions rely on inter-professional learning and clinical education. This is seen as a way to facilitate collaboration between and across disciplines,[129 130] to improve clinical practice[131 132] and assist in process of quality improvement in general.[126 133 134] But as with research on the role of clients in inter-professional learning, the evidence regarding governance is slim.

Health Canada clearly articulated the issues which arise in relation to the implementation and development of an inter-professional approach at a national level. These included time constraints, budget, infrastructure, and institutional climates and cultures. They argue that to foster multidisciplinary approaches, cohesive legislation and policies need to occur at both Federal and State levels.[12]

3.1.4 The client and inter-professionalism (EI)

The impact of inter-professional practice on clients can be seen in two ways. Firstly, the notion of patient (and their carers) as partner is under-pinned by a philosophy of health care service provision which considers genuine collaboration as an important part of an ethical approach to service delivery.[135-137] In this sense, working closely with patients reflects a commitment to a more egalitarian, power-sharing and client-centred approach.[138-140] In this, it mirrors the philosophical arguments for both inter-professional learning and inter-professional practice.[141] Secondly, partnering with clients in the provision of health care has been shown to result in more effective outcomes, not least of all because the active participation of clients can facilitate more acceptable and appropriate interventions and strategies.[142 143]

Comparatively little work has been undertaken on the role of the patient as either a participant in, or a beneficiary of, inter-professional learning, although the Institute of Medicine notes that both patients and caregivers are performing tasks once strictly performed by health professionals.[7] While the exclusion of clients or patients from clinical education, in particular, has been noted[144] the principle of inter-professional practice is seen as one way of shifting health care to a more client-centred focus. A recent article argues that the definition of 'true interdisciplinary practice' should be *"… a partnership between a team of health professionals and a client in a participatory, collaborative and coordinated approach to shared decision-making around health issues."*[145: 1] The inclusion of clients as part of health care teams appears to be associated with positive results for both the clients (in terms of better health outcomes)[146 147] and the professionals (in relation to collaborative practice).[148]

Probably the most advanced example of this approach, at a system wide level, is Health Canada's 'collaborative, patient-centred practice.' This approach is said to involve *"… the continuous interaction of two or more professions or disciplines, organized into common effort, to solve or explore common issues with the best possible participation of the patient."*[149: 28] The report argues that *"By learning how to partner through interprofessional training opportunities, students first begin to be socialized into a collaborative approach to partnering with others. The interpersonal skills that develop through interactions with peers can then be transferred and reinforced in their working relationships with patients and families."*[149: 29]

An area which is showing potential is the development of allegiances between health services and community organisations, as representatives of clients. Long used as clinical placement options for practice learning for allied health professionals, the locating of nursing and medical students in community health organisations provides a way of introducing them to community directed health care, clients as partners as well as patients, and other health professionals.[72] [150] One note of caution has been raised in an article which found that some community based models of care have worse outcomes than single discipline models. The authors argue this is because community models force clients into a relationship with 'invisible' teams in the institution rather than a personal relationship with the healthcare professional.[151]

3.2 Inter-professional practice (RI)

When we talk about inter-professional practice (IPP) in the context of interprofessional learning, we are essentially discussing two concepts: competencies of professionals and educators, and the process of translating theory into practice. In the context of understanding inter-professional practice, these two ideas frequently recur in the literature.

3.2.1 Competencies for inter-professional practice (RI)

The adoption of a competency-based approach to education and practice[152] in the health professions has led to the identification and standardisation of discipline-specific[153-156] and cross-discipline competencies.[157 158 159] Inter-professional learning has provided impetus both for the construction of cross-discipline competencies, and for their use in clinical education.[83 160 161-163]

In order to decipher what competencies are relevant to inter-professional learning and practice, it is important to make a distinction. Competencies are the *"… knowledge, skills, and attitudes that learners must acquire to be able to perform within each domain at a predetermined level and to recognize that the expected level of performance within each domain will vary depending on the learner's stage of education and the specialty he or she is learning"*. They are commonly used in outcomes-based education and training. [164 165]

Competency standards are codified sets of competencies which relate to an occupation or area of practice.[166] Competency standards can apply to individual disciplines (e.g. competency standards for nurses or physiotherapists) or can cut across disciplines (e.g. competency standards for public health, child mental health or rehabilitation). Competency standards are generally issued by professional or accrediting organisations. [167 168]

There are three major sources of competencies for inter-professional practice. The first group are those which are explicitly and solely about inter-professionalism (explicit inter-professional competencies). [169] The second group of competencies are those which address associated issues (for example collaboration or teamwork in health) either as an integrated set of standards, or more commonly as units ore elements within the competency standards or curricula of professional groups and educational institutions (inherent inter-professional competencies).[170] The third group of inter-professional competencies are those which can be inferred from the literature on inter-professional education and practice (embedded inter-professional competencies).[171]

Explicit inter-professional competencies

Oandasan et al. (2004) hypothesize that if health professionals are trained in collaborative competencies, then *"… the potential for change in workforce patterns may occur."*[149] Few articles were available which explicitly set out to identify the competencies required for inter-professional practice. Barr identifies competencies that are *associated* with inter-professionalism, such as collaborative practice, change agent skills, creativity and innovation, teamwork and communication.[72] His work[83:118] provides a comprehensive competency-based framework His model identifies three types of competencies required for successful inter-professional practice: 'common' competencies, that is, those which are required of all health professionals, 'complementary' competencies, those which relate to specific disciplines, and 'collaborative' competencies, those required for different professions to work effectively together. It is this last group of competencies which attract the most attention in relation to inter-professional practice, and include the ability to: describe one's roles and responsibilities clearly; recognise, observe and respect role constraints, responsibilities and competence of oneself, and other professionals; work with other professions for change and resolve conflict; work with others to assess, plan, provide and review care for clients; tolerate differences, misunderstandings and shortcomings in others; facilitate inter-professional case conferences and meetings; and to enter into interdependent relationships with other health professionals.

A recent publication has set out an alternative inter-professional capability framework. Developed by the Combined Universities Interprofessional Learning Unit (CUILU) in the UK, it is part of the UK government's push to advance the field of inter-professional learning. The framework sets out a collection of learning outcomes that students require in order to become 'capable' inter-professional workers. The capabilities are organised in four key domains: ethical practice, knowledge in practice, inter-professional working and reflection. Each domain has three to four capabilities, each relating to some aspect of working as an inter-professional team member.[172]

The Institute of Medicine held a health professions summit in 2002, which followed their major reports highlighting the gaps in patient safety[81] and in the quality of health care services.[126] This work resulted in a report: *Health professions education: a bridge to quality.* This process identified a set of "*… five core competencies that all clinicians should possess, regardless of their discipline, to meet the needs of the 21st-century health system.*"[7:3] Although the competencies are a work in progress, the ability to work in an interdisciplinary team is acknowledged as a core factor in the provision of care.

The competencies included:

- *provide patient-centred care* (identify, respect, and care about patients' differences, values, preferences, and expressed needs, relieve pain and suffering, coordinate continuous care, listen to, clearly inform, communicate with, and educate patients, share decision making and management; and continuously advocate disease prevention, wellness, and promotion of healthy lifestyles, including a focus on population health);
- *work in interdisciplinary teams* (cooperate, collaborate, communicate, and integrate care in teams to ensure that care is continuous and reliable);
- *employ evidence-based practice (*integrate best research with clinical expertise and patient values for optimum care, and participate in learning and research activities to the extent feasible);
- *apply quality improvement* (identify errors and hazards in care, understand and implement basic safety design principles, such as standardization and simplification; continually understand and measure quality of care in terms of structure, process, and outcomes in relation to patient and community needs, and design and test interventions to change processes and systems of care, with the objective of improving quality); and
- *utilize informatics* (communicate, manage knowledge, mitigate error, and support decision making using information technology).[7:4]

Inherent inter-professional competencies

A report on professional associations in Canada failed to identify specifically defined inter-professional competencies in any of the accreditation standards of groups other than doctors.[173] However, professional and educational organisations often establish either tacit or implicit competencies for inter-professionalism when they write objectives or outcomes for their curricula.

A recent study by the Department of Human Services identified the competency standards (where available) for health professionals across Australia. The resulting document provides information on the key units of professional bodies' competency requirements. In Table 4 below, we have identified those competencies which relate to IPP. [174]

The competencies effectively mirror the explicit inter-professional competencies. Core to effective IPP are the concepts of the ability to establish and maintain professional relationships (including the ability to deal ethically and with integrity and honesty, with colleagues and patients); the ability to communicate effectively in a range of contexts and with a variety of people; the competencies

associated with teamwork and collaboration; those associated with learning oneself, and the teaching of others; the ability to manager and lead teams and finally a broad category of professionalism which is associated with behaving in an appropriate professional manner. It is important to note in the case of some professions, their standards did not list an explicit unit or element for some topics (e.g. communication). This however, should not be read as those professions 'missing' that unit. In most cases these concepts, especially communication and professionalism are embedded in the elements of the standards.

Table 4: Inter-professional competencies from professional bodies

	Interprofessional relations	Communication	Collaboration Teamwork	Learning Teaching	Management Leadership	Professionalism
Intern(PGY1) & JMO(PGY 2-3)	✓		✓	✓		✓
Specialists		✓	✓	✓		✓
General practice				✓		
Intensive care/paediatric intensive care		✓		✓		
Obstetrics and gynaecology		✓	✓	✓	✓	✓
Occupational medicine		✓				
Palliative medicine		✓	✓			
Pathology		✓	✓	✓		
Public health medicine		✓				
Rehabilitation medicine				✓	✓	
Surgery		✓	✓	✓	✓	✓
Clinical psychologists	✓	✓				
Dietitians			✓			✓
Occupational therapists			✓	✓		✓
Occupational therapists (mental health)	✓		✓	✓		✓
Orthoptists				✓		
Pharmacists	✓					✓
Physiotherapists						✓
Podiatrist				✓		
Prosthetists/orthotists				✓		
Social workers – entry level	✓	✓				✓
Speech pathologists				✓		
Ambulance/paramedics		✓		✓	✓	
Critical care nursing	✓	✓	✓	✓	✓	
Division 2 nursing	✓		✓			

Embedded inter-professional competencies

Inherent in much of the literature on inter-professional learning and practice are the competencies required to achieve the outcomes desired (e.g. collaboration). Competencies are generally divided into the knowledge, skills and attitudes required to undertake a given task, or achieve a desired goal, although it is obvious that

many competencies (for example patient-centred practice) span categories.

One notable example of embedded inter-professional competencies are those developed by the University of Southampton, through their New Generation Project, a leading initiative on inter-professional learning. Here audiology, nursing, medical, midwifery, occupational therapy, physiotherapy, podiatry, pharmacy, radiography (therapeutic and diagnostic) and social work students have learnt 'with, from and about each other'. The competencies from this course are notable because they are the drivers of the educational process, rather than an outcome of it. The competencies are centred on inter-professional learning units of collaborative learning, inter-professional team working, enabling change in practice and inter-professional problem-solving.[175] Table 5 provides a sample of competencies either identified by the authors themselves, or inferred from their work.

Table 5: Competencies for inter-professional practice

Knowledge
• Professional role boundaries[97 175]
• Learn about other team members expertise, background, knowledge, and values[7]
• Learn individual roles and processes required to work collaboratively[7 175]
Skills
• Group skills[97]
• Communication skills[7 97 176]
• Conflict resolution skills[7 97]
• Leadership skills[97]
• Collaborate with other professionals [175]
• Demonstrates basic group skills, including communication, negotiation, delegation, time management, and assessment of group dynamics[7 175]
• Ensures that accurate and timely information reaches those who need it at the appropriate time[7]
• Coordinates and integrates care processes to ensure excellence, continuity, and reliability of the care provided[7]
• Customises care and manage smooth transitions across settings and over time, even when the team members are in entirely different physical locations[7]
Attitudes
• Develop trust, and about the need for preplanning of roles[7]
• Deal with complexity and uncertainty[175]
• Respect, understand and support the roles of other professionals[175]
• Adaptive, flexible[176]
• Able and willing to share goals[176]

3.2.2 Translating theory into practice (EI)

The ability of health professional students and new graduates to translate theory into practice remains a key problem in clinical education.[177] A related problem is the translation of research

results into practice by practitioners, an issue which has gained momentum with the move toward evidence based practice.[178 179] The 'cognitive apprenticeship model' has sought to address this issue by developing the *'… usually covert processes of cognition, meta-cognition and culture in the profession'.* The model is based on the principles of modelling, coaching, scaffolding, articulation, reflection and exploration (all standard adult learning principles) within the context of a situated (immersion) learning approach.[180: 31] However, while the authors present the model as a situated approach to learning, and give the example of its use as a case study, they do not provide evidence of its effectiveness.

One aspect which was taken up by the Canadian model, that is the opportunity and ability to reflect, is a central dimension in both inter-professional learning, and inter-professional practice.[181] Given the complexity of the issues addressed in inter-professional learning, the potential impact on personal and professional identity and on 'tried and true' ways of working, the reflective practice approach appears to offer both the theory and methods to address the required personal, interpersonal and professional changes.[182] Providing learners with the conditions, skills and opportunities to develop their ability to reflect, within a safe learning environment, remains a challenge to educational institutions and service providers.[183]

One of the most interesting developments in this field is the call for the development of a new framework for inter-professional practice. These writers argue that the full benefits of inter-professional practice are not yet being seen and that the next phase is the creation of new, fluid, and dynamic ways of working.[184]

3.3 Inter-professional relations (RI)

3.3.1 Professional identity and inter-professional practice (EI)

Membership of a professional group is said to form part of person's self concept,[185 186] which helps explain why perceived threats to that group, or to membership of that group, causes anxiety and even hostility towards others.[187 188] The creation of professional identity is part of the socialisation process of health professionals, a process which begins with undergraduate education,[189] but which continues in the workplace. A study of nurses, for example, suggested that their mentors (senior nurses) had more of an impact on their professional identity than their undergraduate training.[190] Doctors, particularly residents, are also said to model their professional behaviour on their mentors.[191] As Apker and Eggly (2004) note, "*Research indicates that the occupational identity doctors develop during training has critical implications for their future professional relationships.*"[192: 414]

This socialisation process quickly develops into professional boundaries and territories.[193] Inter-professional rivalry, tribalism and stereotyping are known to operate,[101 194] as is 'turf protection'.[195] These have significant influence on the ability of team members to work in a multidisciplinary fashion, as professionals struggle to come to terms with differences in values, language, and worldviews.[196] Add to this the differing accreditation and licensing regulations, payment systems, as well as traditional organisational hierarchies, which act as barriers to cross-disciplinary learning, then what has occurred is the dominance of role over the meeting of patients' needs.[7] Moreover the stated objectives of multidisciplinary teamwork and inter-professional practice, including the sharing of power as well as expertise, means that this can be perceived as a threat to professional and personal identity, [197 198] although a number of authors argue that genuine collaborative practice actually leads to the empowerment of all the health professionals involved.[199 200] Resistance from faculties and educational institutions to implement inter-professional education programs has been attributed to similar fears. The notion that professional identities, power and associated hierarchies might be diluted[2] has been said to cause similar anxieties in some academics and faculties, although a more generous analysis is that the lack of evidence for the effectiveness of inter-professional education may also fuel the reluctance.[7 201]

3.3.2 Collaboration (RI)

The notion of collaboration is central to both inter-professional learning and practice. Multiple definitions of collaboration occur in the health education and services literature, but most include the concepts of sharing (including in and of decision-making,[202 203]

interventions,[148] information,[204] values[185 205] and perspectives,[206] and responsibilities[203 205 207]) and partnering (that is a workplace relationship[205] based on trust and respect[208]) for a common goal.[148 202] Some authors also include the idea of inter-[209] or mutual-dependency.[173] Most agree that in order for a collaborative approach to be integrated and sustained it needs to be understood and promoted at both organisational and team levels.[149]

Different models of collaboration have been used in both the provision and evaluation of services. Each model provides a slightly different perspective on the elements, factors, processes and outcomes of collaboration. A recent review of collaboration models (D'Amour *et al.* 2004) identified four key types: those based on organisation theory, those based on sociological theories, alliance models, and empirical models. [173]

D'Amour *et al's* (2004) work is the most comprehensive analysis of the role of collaboration in inter-professional practice currently available. The authors reviewed the above models and identified a number of parameters at macro, meso and micro level, which they argue determine the effectiveness of collaboration between professions.[173] The following description is drawn from D'Amour *et al.*'s work.[139 210]

At the macro level collaboration is said to be shaped by the milieu within which professionals operate. The authors consider the impact of different macro systems on professionals' ability to collaborate: the social system (that is, the ability of power relations between groups to either facilitate or block collaboration),[130 131 205 208] the cultural system (or differences in world views), the professional system (in particular the enculturation into professional values and perspectives versus the valuing of collaboration and difference which, the authors argue, can be brought about through reflective practice)[185 205 211 212] and the educational system (which, if conducted in a traditional 'silo' model supports a narrow professional view which limits understanding of the contribution of different disciplines).[130 204]

At a meso level collaboration is facilitated or hindered by factors within specific organisations. These factors are said to include: organisational determinants such as hierarchical organisational structures;[205 209] organisational philosophy and the way in which it values (or not) collaborative practice;[205 209] administrative support;[213] and team resources[148 212] made available for collaboration (including time and space);[214] and the creation and support of formal co-ordination and communication mechanisms (such as protocols, standards, and policies for inter-professional practice, as well as formal meetings of all team members). [214 215]

The micro level, willingness or ability to collaborate is associated with interpersonal relations. In this group the review authors include: individual willingness to collaborate,[205 216] the creation and maintenance of trust[205 209 217] and respect[217 218] between team members, and the ability of teams and individuals to communicate.[205 212 214 219]

Despite this work it remains unclear which models of collaborative teamwork operate most effectively, or how to facilitate or improve health professionals' willingness to collaborate (or indeed, what to do if they refuse).[220] Nonetheless, the authors of the Health Canada report have provided a useful model of inter-professional education and practice. Their model links interdisciplinary education to enhance learning outcomes, with collaborative practice to enhance patient care outcomes.

3.3.3 Inter-professional teams (RI)

Many authors extol the benefits of inter-professional teams. Inter-professional teams are said together to address the needs of patients. Inter-professional teams are said to be better able to:

- Deal with complex care needs, and therefore patients with chronic conditions[7]
- Be more effective at coordinating and responding to multiple patient needs[221]
- Deliver care across multiple health care settings, such as community based care and rehabilitation centres[97 126 222]
- Reduce the utilization of redundant or duplicate services and provide better quality care[134 221 223 224]
- Find more creative solutions to difficult problems because of the diversity of their members[225]
- Work with patients needing critical acute,[120] geriatric[226] rehabilitative,[157] mental health[227] and/or palliative,[228] care, and result in improved outcomes[229] shorter stays for these patients[230] and fewer medical errors[231 232]

However, the evidence for these pronouncements is weak. Care must be taken with definitions. An inter-professional team is made up of members from different professions and positions. Individuals bring to the team the specialized knowledge, skills, methods and even attitudes of their disciplines. In an effective team, the members *"… integrate their observations, bodies of expertise, and spheres of decision making to coordinate, collaborate, and communicate with one another in order to optimize care for a patient or group of patients."*[7:54]

Three types of inter-professional teams have been identified. Multidisciplinary teams (different professional groups independently or in parallel striving to achieve a common goal),[15 218 233] interdisciplinary teams (different professional groups actively working together on the same project towards a common goal)[202 218] and trans-disciplinary teams (individuals transcending professional and discipline groups to achieve a common goal).[15 16]

Cott (1998) [234: 851] argues that while not explicitly stated, the literature on what is required of an effective health care team applies equally to both single discipline and interdisciplinary teams. In her analysis, research on healthcare teams assumes that: first, team members have a shared understanding of the roles, norms and values of the team; second, the team functions in an egalitarian, cooperative and inter-dependent manner; and third, the combined efforts of shared, cooperative decision making are of greater benefit to the patient than individual decision making. Cott notes, however, that the first two assumptions are not confirmed by research and there is limited support for the third. In practice, many inter-professionals teams have in the past frequently worked in parallel, rather than as an integrated group.[218] As Lowry *et al.* (2000) comment "*There were no common goals, but each group's goals stemmed from its professional education.*"[235: 76] Moreover, some teams have been described as being fraught with conflict and dissonance.[236 237]

Øvretveit's (1996) work provides further insight into the functioning of multidisciplinary teams. His five point schema exposes the more specific characteristics of such teams, that is: their degree of integration, the degree to which they hold to collective responsibility, the membership of the group, the client pathway and decision-making processes and the management structures.[238] The question remains, however, how best to facilitate these processes within a service environment. There are arguments, for example, that inter-professional collaboration is also affected, negatively, by changes to the organisation of care. A move toward market driven service delivery, along with rationing and restructuring is said to cause tensions between managers, professionals and patients, and therefore affect their ability to collaborate.[239] An alternative view is supported by Jones *et al* (1997) who claim that health service restructuring, and in particular changes to the hierarchical nature of health service teams, has supported more collaborative approaches.[129]

Poor levels of success in forming multidisciplinary teams provide a strong argument for active and early inter-professional training. As Clark (1993)[17] and Lynch (1984)[240] both maintain, simply putting people from different professional backgrounds together in a team guarantees neither co-operation nor collaboration. Morrow *et al.*

(2005) point out that active interaction on an ongoing basis is required for effective inter-professional teams, including inter-professional team meetings. They conclude that ongoing training and professional development play a significant part in improving interactions and reducing 'professional anxiety'. [241] Curran *et al's* (2005) evaluation study (using self-reported pre- and post- test time series study) of an undergraduate inter-professional HIV/AIDS program showed that students involved felt that their increased awareness of their and others' roles and their exposure to inter-professional learning had led to improved attitudes towards teamwork. [242]

3.4 Clinical education and placements (EI)

3.4.1 Development of clinical education (RI)

We turn to a consideration of clinical education and clinical placements. There are various concerns such as: when in the educational timetable is clinical learning to occur? How it is to be assessed?[243] What are the expected outcomes, compared to the actual intended, and unintended, outcomes? What are the implications are both for the practitioners involved, their teams and the organisations for whom they work? Are the training or placements to be voluntary or obligatory?[244] Are the training or placements trying to shape behaviour or values and attitudes? If so, do educators have the capacity to affect deeply held beliefs? In short, what are the rights and responsibilities of both educators and learners undertaking inter-professional learning and placing students in clinical settings?

Unlike inter-professional learning and education, which is a product of the 20th century, clinical education has a history dating back over three hundred years.[73] Throughout this period, clinical placements have formed the core of health professionals' training.[245] The purpose of clinical education is generally held to be the development of the students' (or learners') clinical competence.[246] [247] As with inter-professional learning however, while few people question the rationale or aim of clinical education, questions arise as to its actual outcomes.[248]

Despite the World Health Organisation proclaiming inter-professional approaches a key area of health professional development,[249] inter-professional education, though gaining strength, continues to evolve slowly. Inter-professional education goes against a long tradition of training health professionals in isolation, a method which is claimed reinforces autonomous and separate roles and decision making.[97] At the same time, the Institute of Medicine argues that all "… *health professionals <u>should</u> be educated to deliver patient-centered care as members of an interdisciplinary team ….*"[7:3] Hilton and Morris support this proposition and assert, on the basis of a small evaluative study, that the clinical setting is the ideal learning environment of collaborative practice skills.[250]

Clinical education is taking place both in educational institutions and in health services. A key issue is for learning to be genuinely inter-professional, and not simply 'parallel". An example of the difference can be seen in many postgraduate health programs, where individuals from diverse disciplines may work side by side, or together on projects, but the focus is the project or issue itself (for example the epidemiology of tuberculosis), rather than on both the issue at hand (rates and patterns of tuberculosis in developing

countries) and how an inter-disciplinary process might be undertaken in the study of these patterns (for example combining perspectives and skills from public health nursing, nutritionists, pathologists and human geographers). Genuine inter-professional education only occurs where two or more professional groups learn with *and about each other* for a common purpose and with the explicit intent of synthesising their professional skills and perspectives.[251] This can occur at the levels of undergraduate, postgraduate and continuing education.[*]

While Australian health and education systems have instigated inter-professional learning intermittently, they have not adopted a co-ordinated approach either within or across states and territories. A companion document to this, *Inter-professional learning and clinical education: a review of initiatives in Australian jurisdictions* provides a review of the information available on key inter-professional initiatives in Australian health services. Most states and territories are undertaking some inter-professional initiatives; however there is little co-ordination between states, and no clear shared vision. In Australia, the University of Adelaide is acknowledged as a leader in inter-professional teaching and research.[97]

3.4.2 Undergraduate and postgraduate education and curricula (EI)

Barriers to conducting inter-disciplinary courses both within and across educational institutions are considerable. A recent report indicates that clinical education in Australia is marked by lack of innovation and alternatives, under-usage of workplace settings as learning environments, and a lack of research into clinical education.[73] Additional problems include: the compartmentalisation of professional schools, reflected in clinical placements and timetables which all assist in keeping the professions apart at undergraduate level;[252] the need to operate as partners with the community; the reconceptualising of professional expertise to include collaborative scholarship and practice, [253] the need for a common language,[254] core inter-professional competencies,[255 256] and in the view of the Pew Commission, core inter-professional curricula.[8]

While numerous examples of programs have been published,[176] few provide concrete evidence as to the effectiveness of inter-professional education. These papers are, however, useful in helping to tease out the methods and approaches, tensions and successes of inter-professional education. In one UK study, for

[*] For the purposes of this review, continuing education incorporates all non-University, post graduate studies. This includes workshops, courses or training sessions run by health services or professional colleges or associations.

example, medical students were taught in the last years of their courses either with nursing students or with social work students. The programs involved groups in joint analysis of cases and assessment of patients. At the end of the study, the medical students ratings of social workers had improved, but their rating of nurses remained the same.[257] A required interdisciplinary course on health care ethics also had similarly mixed results. A group of first year child health associates (physicians' assistants), doctoral nursing students, medical students and physiotherapists undertook the course which was explicitly intended to facilitate inter-professional learning. Child health assistants rated the course most highly (94% agreed it was important, and 85% felt it helped them better understand their ethical responsibilities), while 38% of medical students felt it was important, and only 49% felt it had helped them understand ethics. Nurses and physical therapists rated the course in the middle of the range.[258] Another study of an inter-professional postgraduate course for health professionals in the UK found that participants' attitudes changed little throughout the course.[259]

Other studies have reported more positive results. In one case, nursing, occupational therapy, and physiotherapy students worked as a team to develop and implement activities centred on patient mobility, and were able significantly to decrease the incidence of complications in patients from immobility.[260] A course which trained pharmacists and medical students on medication adherence found that not only did most of the participants feel that the course had better prepared them to work in health care teams, but that they wanted to participate in more interdisciplinary projects.[114] In another example, physio, occupational, speech and language therapy students worked together to provide services to homeless and chronically ill elderly people.[261] It is important to note, however, that one of the earliest pieces of research into multidisciplinary teamwork[84] found that inter-professional education without the opportunity for collaboration resulted in stereotyping of 'other' professional groups.

Central to the success of inter-professional learning seems to be the issue of timing, or more precisely, how early in the professional education process inter-professional learning can occur. For medical practitioners in particular, the earlier the intervention in their professional formation, the more effective the inter-professional learning program appears to be.[262 263] Some authors specified that it should take place within the first two years of professional training.[264] The most compelling rationale for early introduction of inter-professional learning is that it may prevent or ameliorate the development of stereotypes about other professional groups, stereotypes which hinder collaborative practice.[87] The countervailing argument is based on theories of professional identity development, and claims that later introduction

of inter-professional learning lowers the possibility of perceived threats to personal identity.[265]

3.4.3 Clinical placements (EI)

Clinical placements have long been considered a prime site for inter-professional learning and the development of collaborative approaches.[266] Yet as with inter-professional learning in general, there is a lack of direct evidence about the effectiveness of such placements.[73 248] Clinical placements have formed the core of health professionals' undergraduate (or apprenticeship) training.[245] While the purpose of clinical education is generally held to be the development of the students' (or learners') clinical competence, clinical placements have been used extensively as an important site for inter-professional learning.[267]

Several key elements affecting the effectiveness of clinical placements have been identified. The role and quality of clinical supervisors, for example, have been identified as important factors in the success of placement.[268] The use of preceptors, and education units both for undergraduate students on placement, and as a centralised location of the development of staff,[269] are also considered to provide valuable support to both groups. Here too, however, research falls short. As Oandasan and Reeves (2004) state *"Although a number of authors stress the need for good interprofessional facilitation, little is offered in terms of suggestions which could actually inform potential facilitators."* [173:115]

A particular type of placement, known in the United States as 'service learning' or community placements, is also a potentially valuable source of inter-professional learning. These placements, though supervised, may be voluntarily undertaken over and above the placement requirements for a professional degree. In locating learners within working community centres and organisations, the placements offer participants the opportunity to learn collaboratively both with professionals from other disciplines and with clients, within a structured, supervised learning environment.[270]

3.4.4 Educational approaches to inter-professional learning (EI)

As the Institute of Medicine's report on health professional educations notes, the academic environments of health professions are generally not interdisciplinary, while work environments are increasingly so.[7: ix] This situation has made the provision of opportunities for effective inter-professional learning in the workplace even more important. One way to improve the effectiveness of clinical education and inter-professional learning is

through the utilisation of adult education principles and methods, including the creation of a supportive learning environment.[23]

The use of techniques such as problem-based learning,[271] experiential learning,[42] action learning,[272] and reflective practice[182] all appear to support both adult learning in general, and inter-professional learning in particular. Informal learning and the opportunity to debrief with peers are useful adjuncts to more formal reflective processes.[273] Changes in technology and educational methods have also affected learning and teaching approaches, and have led for example, to more learner-driven approaches. Examples of these are evident in the increased use of computer based learning[274] and simulations[275] in clinical settings, the first of which (problem based learning) is used extensively in inter-professional learning and teamwork development.

The process of inter-professional learning can and does involve a variety of educational approaches, techniques and strategies over and beyond the issue of whether it occurs at undergraduate, postgraduate of workplace context. Barr[276] identified what he determines to be the key dimensions in inter-professional learning in a clinical environment: implicit or explicit, discrete or integrated, all or part, general or particular, positive or negative, individual or collective, work-based or college-based, shorter or longer, sooner or later, common or comparative, or interactive or didactic. One additional dimension – safe or unsafe – could also be added. In the light of what is known about the potential effects of perceived threats to professional identity from inter-professional learning processes (and in particular, processes which are not soundly based or skilfully handled by faculty), the importance of a safe learning environment, that is one where learners feel free to express their opinions and have time to processes their learning, is paramount. This is particularly true if the learning occurs in the workplace and therefore later in the professional development of the practitioner.[86]

5. Conclusion

We have assembled detailed information in order to conceptualise inter-professional learning and clinical education for ACT Health. We have released the four sections comprising the **findings and discussion** component of this report as a set of discussion papers. These are being distributed to interested staff across ACT Health to inform thinking and debate. They are available from the ACT Health website [http://www.health.act.gov.au/c/health].

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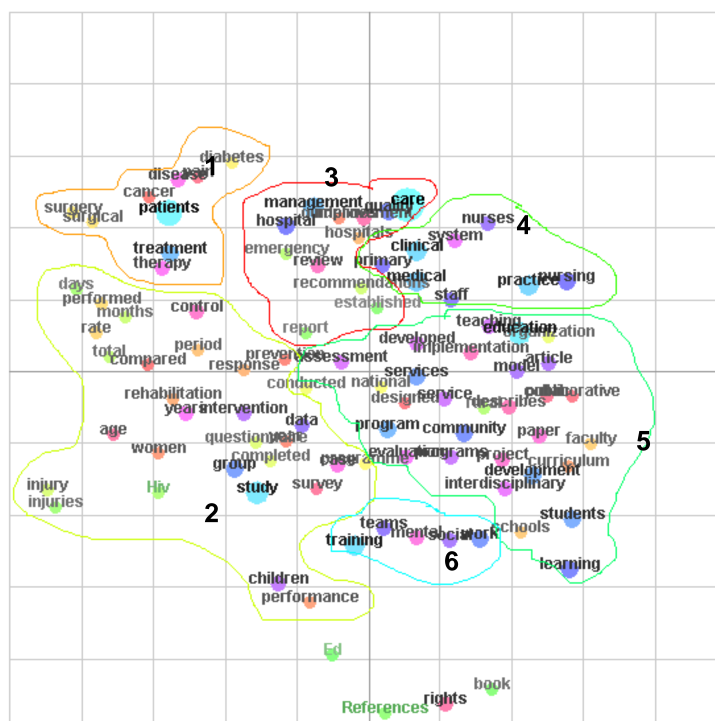
Appendix A: Leximancer analysis of meta-review

1. Background to Leximancer

Figure 1 presents a map of inter-professional learning and clinical education, identified through Leximancer. The issue with the generation of Leximancer maps is the same as with the human analysis of the data: the representation of all the concepts resulted in a map so densely peppered with concepts as to be unreadable. A decision was taken, therefore, to provide a map which includes 60% of all points – the last usefully readable representation.

The Leximancer map suggests shows six central groups or themes of inter-related concepts. While other groupings and sub-groups are, of course, possible (indeed visible), these groupings reviewed in the light of the literature itself, appear to be the central organising concepts of the data. The lines drawn around the themes were produced by the authors, using a function of the program. An additional grouping, which occurs at the base of the map is not a theme – rather it is a collection of boilerplate terms (i.e. terms that recur across material) such as references etc, and has not been included in this analysis.

Figure 1: Leximancer map of inter-professional learning and clinical education



Group 1, at the top right hand corner of the map, gathers the concepts relating to the inter-professional education of patients. While this is outside the scope of this project, it is interesting to note the prominence of inter-professionally or interdisciplinary around diabetes and cancer, in particular, highlighting areas both in which inter-professional learning is currently being utilised, and secondly where future research on the impact on patients may be possible.

Group 2, which is located below the first group on the left hand side of the map captures research into inter-professional practice. It highlights the concepts associated with the evaluation of programs which are conducted by inter-professional or interdisciplinary teams; however, not all articles evaluate how an inter-professional intervention differs, either positively or negatively, from a multidisciplinary intervention. In other words, in many of these studies, the multidisciplinary nature of the team is simply the ‘background’ to the study.

Group 3, at the centre top of the map, clusters issues around the impact of influence of inter-professional practice and service delivery systems and processes. It also includes reports and recommendations on the provision of inter-professional care. To the right of this cluster, group 4 highlights articles on inter-professional practice and the relationships and roles of medical and nursing staff. Noticeable in this instance is that the presence of only one allied health profession, social work, is not grouped with doctors and nurses, but rather in the ‘team’ group, 6.

Group 5, the largest grouping, presents articles on the implications of studies on inter-professional learning and education. These include student learning styles and process, formal educational processes and procedures, curricula and curriculum development, the role of interdisciplinary faculty and the role of service or community learning, which has significant coverage in the US literature.

Table 6 presents the ranked concepts extracted by Leximancer. Some 97 key concepts have been identified. The listing of concepts on the table occurs as a result of the relationship. What this means is that a commonly occurring a concept is, the higher up on the table it is, and the way in which that centrality is determined is the strength of the relationship between a concept and other concepts.

The list of ranked concepts provides a snapshot of 37,812 references in the dataset. Because the listing is not simply a word count, a complex picture begins to emerge. Interestingly, the groupings in both the ranked concept list and the map reflect closely the themes identified independently by the researchers.

Table 6: Leximancer-derived, ranked concepts

Concept	Absolute Count	Relative Count
care	25068	100%
patients	17448	69.6%
education	12928	51.5%
study	12317	49.1%
training	11935	47.6%
clinical	10288	41%
practice	9818	39.1%
treatment	9182	36.6%
medical	9028	36%
management	9006	35.9%
development	7740	30.8%
students	7533	30%
program	7501	29.9%
learning	7298	29.1%
rights	7039	28%
work	6896	27.5%
group	6569	26.2%
services	6300	25.1%
nursing	6074	24.2%
community	6065	24.1%
quality	5883	23.4%
teams	5793	23.1%
hospital	5791	23.1%
data	5748	22.9%
nurses	5701	22.7%
children	5569	22.2%
staff	5565	22.1%
primary	5211	20.7%
social	5143	20.5%
model	4963	19.7%
article	4903	19.5%
intervention	4726	18.8%
system	4535	18%
assessment	4522	18%
interdisciplinary	4482	17.8%
programs	4450	17.7%
teaching	4421	17.6%
service	4358	17.3%
therapy	4292	17.1%
disease	4200	16.7%
evaluation	4072	16.2%
developed	4062	16.2%
years	3995	15.9%
case	3826	15.2%
mental	3812	15.2%
paper	3495	13.9%
review	3387	13.5%
project	3263	13%
control	3261	13%
performance	2938	11.7%
age	2934	11.7%
improvement	2871	11.4%
pain	2863	11.4%
implementation	2857	11.3%
References	2843	11.3%
public	2802	11.1%
survey	2800	11.1%

women	2754	10.9%
cancer	2628	10.4%
rehabilitation	2602	10.3%
prevention	2492	9.9%
compared	2450	9.7%
describes	2424	9.6%
collaborative	2394	9.5%
year	2379	9.4%
response	2359	9.4%
guidelines	2267	9%
surgery	2207	8.8%
schools	2172	8.6%
surgical	2156	8.6%
curriculum	2150	8.5%
injury	2148	8.5%
hospitals	2130	8.4%
diabetes	2122	8.4%
designed	2119	8.4%
rate	2104	8.3%
performed	2101	8.3%
period	2054	8.1%
faculty	1974	7.8%
organization	1973	7.8%
programme	1946	7.7%
national	1816	7.2%
recommendations	1731	6.9%
completed	1671	6.6%
questionnaire	1671	6.6%
emergency	1588	6.3%
total	1581	6.3%
months	1567	6.2%
conducted	1562	6.2%
Hiv	1554	6.1%
book	1500	5.9%
injuries	1496	5.9%
rural	1257	5%
days	1193	4.7%
report	1098	4.3%
Ed	867	3.4%
established	848	3.3%