

Knowledge Transfer & Exchange in Interprofessional Education

SYNTHESIZING THE EVIDENCE
TO FOSTER
EVIDENCE-BASED DECISION-MAKING

March 2009, Version 2



Canadian Interprofessional Health Collaborative
Consortium pancanadien pour l'interprofessionnalisme en santé

*learning to work together, working to learn together
apprendre à collaborer, collaborer pour apprendre*

The Canadian Interprofessional Health Collaborative (CIHC) is made up of health organizations, health educators, researchers, health professionals, and students from across Canada. We believe interprofessional education and collaborative patient-centred practice are key to building effective health care teams and improving the experience and outcomes of patients. The CIHC identifies and shares best practices and its extensive and growing knowledge in interprofessional education and collaborative practice.

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KNOWLEDGE TRANSFER & EXCHANGE IN INTERPROFESSIONAL EDUCATION

Synthesizing the Evidence
to Foster
Evidence-based Decision-making

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Knowledge Transfer & Exchange in Interprofessional Education: Synthesizing the Evidence to Foster Evidence-based Decision-making available at:

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OVERVIEW

As Canada's national hub on interprofessional education and collaborative practice, the Canadian Interprofessional Health Collaborative (CIHC) has received numerous requests from health system planners for evidence that could help them support interprofessional collaboration. In order for interprofessional education to become embedded in the healthcare system, it must be presented in language and concepts that are accessible.

In response, we developed the following:

- [1-page Evidence Review](#)
- [2-page Frequently Asked Questions About IPE](#)
- [Technical Report](#)

The Evidence Review and Frequently Asked Questions are based on the findings of the *Technical Report, a Synthesis of Review Evidence for IPE* and a series of focus groups undertaken with decision makers from October to December, 2008.

Evidence Review

FOCUS: INTERPROFESSIONAL EDUCATION

The goal: Understanding the evidence that has been collected and reported about interprofessional education (IPE).

Decision-makers in government and health administration have identified collaborative practice as one strategy for managing some of the challenges facing our health care system (i.e. patient safety).

We need to be able to present decision-makers with evidence that IPE leads to interprofessional collaboration in practice

and contributes to improved health outcomes. Short-term and pilot projects have shown that IPE has the potential to enhance practice, improve the delivery of services and make a positive impact on patient care.

Over the past decade there have been a number of reviews about IPE. The

full paper *Synthesis of Review Evidence for Interprofessional Education* gives a summary of what evidence is available and how it can best be used.

“Interprofessional Education occurs when two or more professions learn with, from and about each other in order to improve collaboration and the quality of care.”

– CAIPE (2002)

The Synthesis of Review Evidence for Interprofessional Education (2008) is available at www.cihc.ca/resources/publications.html

We've Found that IPE

- ♦ Can improve collaborative practice, enhance delivery of services and have a positive impact on patient care.
- ♦ Has the potential to enable students and practitioners to learn the knowledge and skills necessary for interprofessional collaboration.
- ♦ Can be effectively delivered in a variety of education and practice settings.
- ♦ Is generally well received by participants.
- ♦ Has been advanced using quality improvement approaches.

Next Steps

- ♦ Initiate a dialogue between decision-makers and researchers about how to improve the evidence linking IPE to collaborative practice.
- ♦ As the hub for interprofessional education and collaborative practice in Canada, CIHC can connect individuals and organizations in this dialogue.
- ♦ Researchers and decision-makers work with knowledge exchange experts to ensure that the evidence produced can be used to develop and implement new strategies for collaborative, patient-centred practice.

For more information about interprofessional collaboration, visit the *Canadian Interprofessional Health Collaborative* (CIHC) www.cihc.ca

FREQUENTLY ASKED QUESTIONS

About Interprofessional Education

1. What is interprofessional education (IPE)?

A profession is an occupation, vocation or career requiring special training (for example, doctor, licensed practical nurse, respiratory therapist, lawyer, accountant).

Interprofessional Education (IPE) occurs when two or more professions learn with, from and about each other in order to improve collaboration and the quality of care. (CAIPE, 2002)

(Also see http://www.cihc.ca/resources-files/CIHCStatement_IPE_Final.pdf)

2. Why does IPE matter?

IPE has the potential to enhance practice, improve the delivery of services and make a positive impact on patient care. Health planners are beginning to look at changing the way health services are delivered and the manner in which providers interact with each other. IPE is one process that teaches students and practitioners how to effectively work across professions.

3. How could improved IPE research benefit decision-makers?

In order for decision-makers to allocate funding and resources, more research into the links between interprofessional education and collaborative practice is needed.

Decision makers would benefit from research that demonstrates how interprofessional collaboration can help increase patient safety, reduce wait times, improve management of chronic diseases, revitalize the workplace, etc.

4. What are some practical applications of IPE?

IPE can be delivered effectively in a variety of settings. CIHC has documented the successes and outcomes of many interprofessional initiatives. Please see <http://www.cihc.ca/resources/ipe-in-action.html> for details.

5. What are the key ingredients for successful IPE?

- ♦ Resources (e.g. for implementation and evaluation)
- ♦ Curricula changes (e.g. incorporating IPE into every health science program)
- ♦ Collaborative learning environments (e.g. team practice/field placements)
- ♦ Structures to support collaboration (e.g. faculty cross-appointments)
- ♦ Lifelong learning (e.g. continuing interprofessional education opportunities)
- ♦ Interprofessional Competencies (e.g. shared knowledge, skills, attitudes, values, judgments)
- ♦ Sustainability (e.g. embedding pilot projects into the system)

6. How does IPE benefit healthcare providers and patients?

Evidence shows that IPE can enable students and practitioners to learn the knowledge and skills necessary to work collaboratively. Interprofessional collaboration can enhance practice, improve delivery of services and may also have a positive impact on patient care.

7. How can students learn to be interprofessional?

Many universities and colleges now offer interprofessional courses and practicums to health and human service students. For more information on student engagement in interprofessional collaboration, the National Health Sciences Students' Association at www.nahssa.ca is a national student-run organization with active chapters across Canada.

8. How can practitioners learn to be interprofessional?

In Canada, most health professionals are employed through or affiliated with hospitals and health authorities, which offer courses and projects specific to IPE. Quality improvement approaches can advance IPE by enhancing practice, delivery of services and patient care. Health providers who mentor or preceptor can share interprofessional and collaborative experiences with students.

9. Where do I go to find out more about IPE?

CIHC is the national hub for interprofessional education and collaborative patient-centred care. Membership in CIHC is free. Sign up on our website www.cihc.ca

10. How do we strengthen the evidence base for IPE?

- ♦ Research reports should articulate details of the IPE program being evaluated and provide a clear discussion of limitations.
- ♦ Research reports should provide specific information about the IPE processes and outcomes, using both qualitative and quantitative data.
- ♦ To improve the quality of studies, researchers should combine existing data sets and/or undertake multi-institutional studies.
- ♦ To understand how IPE links to collaborative practice long-term studies are required.
- ♦ Effective knowledge exchange strategies are needed to ensure that research results can be effectively translated into practice.

Synthesis of Review Evidence for Interprofessional Education

TECHNICAL REPORT

INTRODUCTION

In the 2004 Pan-Canadian Health Human Resources Strategy, the Canadian Government identified interprofessional education (IPE) as one of three key strategies that will contribute to sustainable change in the healthcare system. A body of quantitative and qualitative evidence linking IPE with collaborative practice and better patient care is beginning to grow, but information that links this evidence to the strategic priorities of decision-makers is limited.

This report provides a synthesis and critical appraisal of the evidence for IPE contained in the systematic review literature. The report aims to provide a more informed understanding of overall quality of evidence for IPE as well how this form of education may assist policymakers with their future decisions regarding IPE.

The Reviews

Following an electronic search for published and unpublished IPE reviews, six reviews were located: Barr et al (2000), Cooper et al (2001), Reeves (2001), Barr et al (2005), Hammick et al (2007) and Reeves et al (2008). In total,

these reviews report on the effects of 181 IPE studies¹ spanning from 1974 to 2005. While the reviews report on studies which differ in their methodological quality and report a range of outcomes associated with IPE (see Findings Section), the reviews do share a number of common elements. All six share a similar definition of IPE;² five of the reviews were undertaken by a number similar review teams; five share similar (methodologically inclusive) approaches to their inclusion criteria.

In addition, five of the reviews employ a similar approach to recording IPE outcomes. Originally developed by Kirkpatrick (1967), the typology distinguished four levels of outcome (learners' reactions, acquisition of knowledge/skills/attitudes, changes in behaviour, changes in organisational practice), and was expanded and modified by Barr and colleagues in 2000 as follows in Table 1.

¹ Although the total count is 202 studies, 21 studies are duplicates, as they are included in two or more of the six reviews. These figures do not include the studies reported in the Cooper et al (2001) review as these authors, unusually, did not provide a list of included studies.

² The IPE definition used was: 'two or more professions learning with, from and about each other to improve collaboration and the quality of care' (CAIPE, 2002)

Table 1: Kirkpatrick's Modified Typology

Level	IPE Outcome
Level 1	reaction (learners' views on the learning experience and its interprofessional nature)
Level 2a	modification of attitudes/perceptions (changes in reciprocal attitudes or perceptions between participant groups)
Level 2b	acquisition of knowledge/skills (gains of knowledge and skills linked to interprofessional collaboration)
Level 3	behavioural change (individuals' transfer of interprofessional learning to their practice setting and their changed professional practice)
Level 4a	change in organizational practice (wider changes in the organization and delivery of care)
Level 4b	benefits to patients/clients (improvements in health or well being of patients/clients)

Table 2 contains further information relating to the six IPE reviews included in this report.

Table 2: Overview of information on methods and inclusion criteria of the IPE reviews

Review	Details	Methods	Inclusion criteria
Barr et al (2000)	Review of UK of the general effects of IPE Located 19 published and unpublished studies	Searches: hand searches of published/unpublished studies Quality: assessment of quality of studies undertaken	UK-based studies only All research designs included All reported outcomes / use of six-point revised Kirkpatrick outcome typology
Cooper et al (2001)	Review of the general effects of pre-licensure IPE Located 30 published studies	Searches: process not described. Quality: based on score for IPE program quality (1-6) and methodological scores (1-25)	Pre-licensure learners All research designs included All reported outcomes / used four-point Kirkpatrick outcome typology
Reeves (2001)	Review of effects of IPE on mental health professionals Located 19 published studies	Searches: Medline, Cinahl, Psyclit Quality: assessment of studies and score (1-4) allocated based on quality of methods	Mental health professionals involved in delivery of care to adults with mental health problems All research designs included All reported outcomes / use of four-point Kirkpatrick outcome typology
Barr et al (2005)	Review of the general effects of IPE Located 107 published studies	Searches: Medline, Cinahl, ASSIA, BEI Quality: assessment of studies and scores allocated based on 'quality of study' (1-5) and 'quality of information' (1-5) ³	All research designs included All reported outcomes / use of six-point revised Kirkpatrick outcome typology Only studies which scored a minimum of '3' for quality of study and '3' for quality of information included
Hammick et al (2007)	BEME review of the general effects of IPE Located 21 published studies	Searches: journal hand search Quality: as above, use of scores relating to 'quality of study' and 'quality of information'	All research designs included All reported outcomes / use of six-point revised Kirkpatrick outcome typology used Only studies which scored a minimum of '4' for quality of study and '4' for quality of information included
Reeves et al (2008)	EPOC review of the effects of IPE on professional practice and patient care Located 6 published studies.	Searches: Medline, Cinahl, EPOC database Quality: Standard Cochrane methodological/outcome assessment	Only RCT, CBA, ITS research designs included Only studies which use validated instruments Only patient/client and/or healthcare process outcomes

³ Within this system, a score of '1' for quality of study and '1' for quality of information represents the lowest score an IPE study can obtain, while scores of '5' and '5' represent the highest score for an IPE study

METHODS

This synthesis aims to provide an analysis and comparison of critical overview of the evidence included in the IPE reviews. While reviews aim to identify as many relevant studies as possible, the quality of the studies they include can differ widely (Hunt & McKibbin 1997). Review syntheses allow the evidence contained in reviews to be combined and appraised, resulting in more generalizable and applicable results (e.g. Ernst 2002, Derry 2006, Stinson et al 2008).

Given the broad range of evidence (quantitative, mixed methods and qualitative studies) contained in the reviews, an interpretative approach⁴ to synthesizing the IPE evidence-base was adopted.

Synthesis process

The synthesis of the evidence contained in the reviews was undertaken by the adoption of a process described by Sandelowski et al (1997). This approach aims to generate synthesized summaries

of the key elements related to the evidence presented in reviews. The following steps were undertaken to synthesized the evidence for IPE:

- ♦ Search and location of relevant reviews;
- ♦ Familiarization – a close reading and re-reading of reviews to provide an in-depth understanding of review contents;
- ♦ Initial synthesis – grouping review data (i.e. search processes, quality assessment techniques, reported outcomes). This process is similar to what Paterson et al (2001) termed ‘meta-data analysis’;
- ♦ Secondary synthesis – comparison of research designs and study methodologies used in the reviews to appraise the quality of these elements;
- ♦ Final synthesis – combining ‘findings’ from proceeding two steps for critical appraisal and production of key synthesized issues/themes of interest.

The themes of interest for this synthesis were: nature of IPE programs; nature of reported IPE outcomes and quality of studies included in the reviews.

⁴ Interpretativism assumes that reality and knowledge as constructed and interpreted by people in different ways, as a result there is not a single truth, rather different (sometimes competing) versions of truth, dependent upon an individuals’ viewpoint. This approach allows a variety of methodologies to be used to help to understand different elements and perspectives of the social world (Crotty 1998).

FINDINGS

This section reports the key findings from the synthesis and critical appraisal of the 181 studies contained in the six IPE reviews. Table 3 provides an overview of key information related to the findings and quality of evidence contained in the IPE reviews.

The remainder of this section is divided into three parts. The first reports synthesize findings related to the nature of IPE programs, the second provides a critical appraisal of the evidence base for IPE and the final offers details of IPE outcomes reported in the reviews.

Table 3: Key details relating to the findings and quality of evidence in the IPE reviews

Review	Key findings	Quality of evidence
Barr et al (2000)	19 studies (7 pre-licensure/12 post-licensure): range of IPE programs though most based in primary care; outcomes focused on reactions and attitudes; handful of studies reporting changes to organizational practice/patient care	Methodological limitations: use of pre/post designs; bias not well explored; single site pilot studies – limiting generalization
Cooper et al (2001)	30 studies (all pre-licensure): variety of programs included; short-term self-reported changes to attitudes, beliefs, knowledge, skills of pre-licensure learners	Lack of rigor in studies due to selection, attrition, detection biases; use of non-validated instruments; poor quality analyses; single site pilot studies
Reeves (2001)	19 studies (all post licensure): range of different IPE programs; outcomes focused on short-term changes to individual knowledge/skills and organizational practice; very poor idea of impact of IPE on patient care	Generally weak study designs; limited discussion of bias; poor descriptions of programs; detection of change rests mostly on self-reported measures; single site studies
Barr et al (2005)	107 studies (85 post-licensure/20 pre-licensure/ 2 mixed licensure): range of IPE programs within studies; most report changes to individual knowledge and skills, some studies report changes to organizational practice and delivery of patient care	Studies of variable quality; many though provide poor discussion of methodological limitations; use of non-validated tools; change linked to self-reported measures; most small single site studies – limiting generalization
Hammick et al (2007)	21 studies (14 pre-licensure/6 post-licensure/ 1 mixed licensure): the review provides linkages between presage, process and product factors for IPE; most products (outcomes) focused on changes to reaction, knowledge, skills	Higher quality studies than report in Barr et al (2005); use of quantitative and qualitative approaches, self-reported measures; single site studies
Reeves et al (2008)	6 studies (all post-licensure): 4 report positive changes for professional practice, patient satisfaction; 2 studies report IPE having a neutral impact; heterogeneity of IPE programs	Rigorous research designs; small sample sizes; poor quality controls used; single site studies – limiting generalization

Programs Studied

In relation to the nature of IPE programs contained in the six reviews, the following key issues were:

- ♦ While IPE was offered to a range of different combinations of professional groups, medicine and nursing were the core participants.
- ♦ Programs were delivered in a variety of acute, primary and community care settings.
- ♦ Most IPE programs were delivered as a voluntary (i.e. elective) learning experience to participants.
- ♦ In general IPE programs employed formative assessments of learning, typically using assessment techniques in the form of individual written assignments and/or joint presentations.
- ♦ While the duration of IPE programs was varied, ranging from 1-2 hour sessions to programs delivered over a period of months, most programs lasted between one and five days.
- ♦ Programs were more commonly delivered to post-licensure learners in their workplaces, although IPE is increasingly being delivered to pre-licensure learners as a classroom or sometimes as a practice-based activity.
- ♦ Although IPE programs used a variety of different combinations of interactive learning methods, seminar-based discussions, group

problem-solving and/or role play activities were the most common methods employed.

- ♦ Quality improvement approaches, specifically CQI and TQM, were commonly used within post-licensure IPE programs.
- ♦ Few IPE programs included any form of formal academic accreditation.
- ♦ Programs were delivered to address a range of different clinical conditions (e.g. asthma, arthritis) or acute conditions (e.g. cardiac care).
- ♦ Most programs draw, implicitly, upon the adult learning principles developed by authors such as Knowles, Schon and Kolb.

Quality of Studies

In relation to the quality of evidence contained in the IPE reviews included in this synthesis, the following key issues were:

- ♦ The majority of studies provide little discussion of methodological limitations associated with their research. As a result, it is difficult to understand the nature of their biases which in turn undermines the quality of research.
- ♦ Most studies pay little or no attention to sampling techniques in their work or issues relating to study attrition. This again undermines the quality of evidence they can offer.

- ♦ Across the studies, there was a propensity to report the short-term impacts associated to IPE in relation to learner changes of attitude and knowledge. As a result there is only a limited idea of the longer term impact of IPE, particularly on organizational change and patient care or the educational processes that occur during the delivery of a program.
- ♦ Most IPE studies were undertaken in single site studies, in isolation from other studies, limiting the generalizability of research.
- ♦ There was a widespread use of non-validated instruments to detect impact of IPE on learner and/or patient satisfaction. While the use of such tools can provide helpful data for local quality assurance issues, they limit the quality of the research as it is difficult to assess their validity or credibility.
- ♦ A number of studies only offered limited or partial descriptions of their IPE programs. Such poor quality information means it is difficult to detect whether reported changes are actually attributable to the program delivered.
- ♦ Measures to detect changes in individual behaviour were particularly poor, often relying on simple self-reported descriptive accounts of this form of change.
- ♦ Most change recorded in the studies was change that the learners reported themselves. This type of evidence is not regarded as robust, as it does not necessarily detect *actual change*, it can only report on a person's *perception of change*. The two do not always concur.
- ♦ Despite a number of weaknesses in the quality of evidence offered by the IPE reviews, there were some encouraging quality issues. Most notably, there was a fairly common use of quasi-experimental research designs (e.g. BA, BDA studies) which can provide some indication of change associated with the delivery of IPE; most studies did gather two or more forms of data (typically survey and interviews); there is a growing use of longitudinal studies to begin establishing the longer-term impact of IPE on organizations and patient care.

Outcomes

In relation to the nature of reported outcomes contained in the six reviews, the following key themes emerged:

- ♦ Five of the six IPE reviews report positive learner-focused outcomes usually linked to reactions, changes of perception/attitudes and/or changes in knowledge/skills (Barr et al 2000, Cooper et al 2001, Reeves 2001, Barr et al 2005, Hammick et al 2007). After participating in interprofessional programs, most learners claim to have a better understanding of how their own

profession integrates into the healthcare team. Their reactions, knowledge, skills and attitude change after focusing on the interprofessional aspects of their work.

- ♦ Similarly, these five reviews report that IPE can result in positive learner reactions, where the learner ‘enjoyed’ or ‘valued’ their interprofessional experiences (Barr et al 2000, Cooper et al 2001, Reeves 2001, Barr et al 2005, Hammick et al 2007). Most learners who participate in interprofessional programs provide positive feedback about the benefits of learning with, from and about their fellow learners from other professional groups.
- ♦ These five reviews also report positive (generally self-assessed) outcomes related to changes in learner perceptions/attitudes of other professional groups, views of interprofessional collaboration and/or the value they attach to working on an collaborative basis (Barr et al 2000, Cooper et al 2001, Reeves Barr et al 2005, Hammick et al 2007). These reviews report that IPE can positively influence how learners view other health disciplines. Learners often report higher levels of respect for other professions. Most learners who participate in interprofessional programs also come to recognize the value of working as part of a collaborative team.
- ♦ In addition, these five reviews report positive (generally self-assessed) changes in learner knowledge/skills of interprofessional collaboration, usually related to an enhanced understanding of roles and responsibilities of other professional groups, improved knowledge of the nature of interprofessional collaboration and/or development of collaboration/ communication skills. Interprofessional education changes what learners know and understand about how to practice collaboratively. Most learners gain a better understanding of the roles and responsibilities of other professions and have a better sense of how interprofessional collaboration and communication skills grow and develop.
- ♦ Four of the reviews report that IPE can change individual behaviour. However, the small amount of evidence related to this change are usually restricted to self-reported accounts of practitioners’ working in a more collaborative manner with their colleagues from other professional groups, rather than any more robust form of evidence (Barr et al 2000, Reeves 2001, Barr et al 2005, Hammick et al 2007).
- ♦ Five of the reviews report that positive changes to organizational practice can result from the delivery of IPE. These changes are usually around the organization of care,

for example referral practices between professions, working patterns, processes and improved documentation (guidelines, protocols, shared records) (Barr et al 2000, Reeves 2001, Barr et al 2005, Hammick et al 2007, Reeves et al 2008). When IPE is consistently practiced, some of the most noticeable changes can be to the organization itself.

- ◆ These five reviews also report that there is a small amount of evidence indicating that IPE can affect change to the delivery of care to patients/clients. Of this evidence, it has been found that IPE can affect patient care in relation to improvements in patient satisfaction, clinical outcomes (lower infection rates, fewer clinical errors) and shorter patient stays (Barr et al 2000, Reeves 2001, Barr et al 2005, Hammick et al 2007, Reeves et al 2008).

- ◆ In general, reviews who include pre-licensure IPE report that this type of learning can affect outcomes in relation to (self-assessed) changes to attitudes, beliefs, knowledge and collaborative skills (Barr et al 2000, Cooper et al 2001, Barr et al 2005, Hammick et al 2007). While reviews who include post-licensure IPE report a similar range of learner-oriented changes, they also report evidence that IPE can affect change to organization practice and, a smaller amount of evidence related to changes in patient care (Barr et al 2000, Reeves 2001, Barr et al 2005, Hammick et al 2007, Reeves et al 2008).

CONCLUSIONS

As indicated in this report, the evidence for the effects of IPE rests upon a variety of different programs (in terms of duration, professional participation, etc), methodologies and methods (from experimental research studies to mixed methods and qualitative studies) of variable quality, as well as a range of IPE outcomes (e.g. reports of learner satisfaction to changes in the delivery of care). Nevertheless, this synthesis identified that:

- ♦ IPE is generally well received by participants;
- ♦ IPE can enable students and practitioners to learn the knowledge and skills necessary for collaborative working;

- ♦ IPE can enhance practice, improve the delivery of services and make a positive impact on care;
- ♦ The use of quality improvement approaches such as Continuous Quality Improvement or Total Quality Management can support IPE in enhancing practice, delivery of services and patient care;
- ♦ IPE can be effectively delivered in a variety of clinical settings.

The synthesis also found that while the quality of evidence for IPE is currently limited, it is improving as higher quality studies continue to be published.

RECOMMENDATIONS

Based on the findings from the synthesis five recommendations are offered to strengthen the evidence base for IPE:

- ♦ That future reports of IPE clearly articulate precise details of the program under evaluation as well as a clear discussion of methodological limitations (e.g. sampling, detection bias);
- ♦ That future reports of IPE provide specific information about the educational processes employed within an IPE program, and provide both quantitative and qualitative data to describe the outcomes of those processes;
- ♦ That the IPE research community develop methodologies to improve the generalizability of their studies through, for example, examining opportunities to combine existing data sets from single sites;
- ♦ That the IPE research community develop mechanisms to foster multi-site and multi-institutional longitudinal studies;
- ♦ That the IPE research community build knowledge dissemination strategies to ensure (and assure) the translation of results into effective teaching and learning experiences.

REFERENCES

Included reviews

- Barr H, Hammick M, Freeth D, Koppel I & Reeves S (2000) *Evaluating Interprofessional Education: A UK Review for Health and Social Care*. BERA/CAIPE: London.
- Barr H, Koppel I, Reeves S, Hammick M, Freeth D (2005) *Effective Interprofessional Education: Assumption, Argument And Evidence*. Blackwell, London.
- Cooper H, Carlisle C, Gibbs T, Watkins C (2001) Developing an evidence base for interdisciplinary learning: a systematic review. *Journal of Advanced Nursing*; 35:228-37.
- Hammick M, Freeth D, Koppel I, Reeves S & Barr H (2007) A Best Evidence Systematic Review of Interprofessional Education. *Medical Teacher*; 29:735-751.
- Reeves S (2001) A systematic review of the effects of interprofessional education on staff involved in the care of adults with mental health problems. *Journal of Psychiatric Mental Health Nursing*; 8:533-542.
- Reeves S, Zwarenstein M, Goldman J, Barr H, Freeth D, Hammick M, Koppel I. (2008) *Interprofessional education: effects on professional practice and health care outcomes* (Cochrane Review). In: The Cochrane Library, Issue 1, 2008. John Wiley & Sons, London.

General references

- Cooper H, Carlisle C, Watkins C, Gibbs T (2000) Using qualitative methods for conducting a systematic review. *Nurse Researcher*; 8:28-38.
- Crotty M (1998) *The foundations of social research*. Sage, Thousand Oaks, CA.
- Derry C (2006) Review of systematic reviews of acupuncture published 1996-2005. *Clinical Medicine*; 6:381-386.
- Ernst E (2002) A systematic review of systematic reviews of homeopathy. *British Journal of Clinical Pharmacology*; 54:577-582.
- Gough D (2004) systematic research synthesis to inform the development of policy and practice in education. In Thomas, G & Pring R (eds) *Evidence-based Practice*. Open University Press, Milton Keynes.
- Hunt D & McKibbin K (1997) Locating and Appraising Systematic Reviews. *Annals of Internal Medicine*; 126:532-538.
- Paterson B, Thorne S, Canam C. & Jillings C (2001) *Meta-study of qualitative health research: a practical guide to meta-analysis and meta-synthesis*. Sage, Thousand Oaks, CA.
- Sandelowski M, Docherty S & Emden C (1997) Qualitative metasynthesis: issues and techniques. *Research in Nursing and Health*; 20, 365-371.
- Stinson J, Yamada J, Dickson A, Lamba J, Stevens B (2008) Review of systematic reviews on acute procedural pain in children in the hospital setting. *Pain Research & Management*; 13: 51-57.

APPENDIX

Glossary of terms

ASSIA is the Applied Social Science Index and Abstracts, an electronic bibliographic database that primarily contains social science literature

BA (before and after) study is a research design in which data are collected before and after an 'intervention', for example, interprofessional education.

BDA (before, during and after) study is similar to a before and after study except this type of research also collects data at some point during the intervention.

BEI is the British Educational Index, an electronic bibliographic database that primarily contains British educational literature

BEME is Best Evidence Medical Education Collaboration is a group of individuals committed to the promotion of Best Evidence Medical Education (see www.bemecollaboration.org)

CBA (controlled before and after) study is like a before and after study except that to help detect change more accurately, data are also collected from a control or comparison group.

CINAHL is the Cumulative Index to Nursing and Allied Health Literature, an electronic bibliographic database that contains literature relating to those professions

CQI (continuous quality improvement) is an approach to quality management that emphasizes the organization and systems by promoting the need for data to analyze and improve processes.

EPOC is the Effective Practice and Organization of Care – a review group based in the Cochrane Collaboration (see www.cochrane.org).

Medline is an electronic bibliographic database that primarily contains medically-orientated literature

ITS (interrupted time series) study is one when one group of participants is followed over a period of time which is interrupted by an event such as IPE. Data are collected at a number of times before and after the event.

RCT (randomized controlled trial) is a test of the efficacy of an intervention which aims to control for intervening variables by randomly allocating subjects into either an intervention group or a control group.

TQM (total quality management) is a management strategy aimed at embedding quality in organizational processes.

