Operationalization of Interprofessional Collaborative Practice in the Community Care Setting

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Executive Summary

The strong and flexible healthcare workforce resulting from collaborative practice is seen to be ideal to manage the growing number of individuals with multiple complex health issues (World Health Organization, 2010). For this reason, interprofessional collaboration (IPC) and interprofessional education (IPE) initiatives have been recommended, implemented and supported at global, national, provincial and local levels**.** A number of interprofessional (IP) interventions at the post-licensure level are promoted in the literature as improving interprofessional collaboration and subsequently positively impacting patient outcomes, provider satisfaction, workplace quality and cost-effectiveness. It is not only unclear which interprofessional interventions have the largest impact on collaboration, but the operationalization of these interventions is not fully explored.

A systematic review of the literature was undertaken to assess the effect of post-licensure IP interventions (education, practice and organization) on IPC in the community care setting. The specific questions addressed are:

- How do post-licensure IP education, practice and organization interventions impact IPC in the community care setting?
- How are post-licensure IP education, practice and organization interventions operationalized in the community care setting?
- Which post-licensure IP interventions have the greatest impact on the operationalization of IPC in the community care setting?

Sufficient evidence was found to show that interprofessional (education, practice and organization) interventions in the community setting have a positive effect on IPC. There was however, insufficient evidence to promote the effectiveness of one type of intervention over

another. A number of the included studies also investigated and included discussion of the barriers and facilitators to IPC identified by the study participants and researchers which provided information and further clarity to support recommendations for practice, although due to the lack of evidence the following recommendations are to be considered with caution.

- Implement multiple interprofessional (education, practice and/or organization) interventions at the same time achieve the most promising results (Chan et al., 2010; Clark & Smith, 2009; Martinussen et al., 2012; (Suter & Deutschlander 2011).
- Provide IPE with opportunities to:
    - develop IPC knowledge and skills (Forchuk & Vingilis, 2008; PICE, 2008; Robben et al., 2012; Suter & Deutschlander),
    - develop disciplinary and interdisciplinary clinical practice knowledge and skills (PICE),
    - develop appreciation for and understanding of and respect for other health care providers' roles and responsibilities (Agarwal et al., 2008; Emery et al., 2011; Legault et al., 2012; PICE; Robben et al.),
    - learn from and interact with other HPs (Clark & Smith; Emery et al.; Martinussen et al.; PICE; Robben et al.).
- Provide a team leader or facilitator to coordinate team activities and provide training in all aspects of interprofessional team leader responsibilities and leadership processes (Chan et al.; Clark & Smith; Suter & Deutschlander).
- Assess team functioning and performance to provide targeted activities to improve team functioning (Emery et al.; Suter & Deutschlander; Thylefors, 2012).

- Provide opportunities to utilize team strengths to overcome team challenges (Emery et al.; Suter & Deutschlander; Thylefors, 2012).
- Hire staff committed to interprofessional collaborative practice (Bruner et al., 2011; Grymonpre et al., 2008; Howard et al., 2011).
- Hire staff committed to interprofessional collaborative practice (Bruner et al., 2011; Grymonpre et al., 2008; Howard et al., 2011).

Introduction

Interprofessional collaboration is a commonly promoted care-delivery model in our healthcare system. The World Health Organization (WHO) (2010) promotes interprofessional education (IPE) and interprofessional collaboration (IPC) as positively impacting some of the world's most pressing health challenges by capitalizing on the skills and knowledge of health care professionals and providing a comprehensive approach to care. Engaging in collaborative practice maximizes the skills and strengths of healthcare workers and allows them to function at their highest potential capacity. The resulting strong and flexible healthcare workforce is ideal to confront the growing number of individuals with multiple and complex health issues. For example, interprofessional teams are able to provide a more comprehensive approach for the treatment and management of chronic diseases such as dementia, diabetes and congestive heart failure. These conditions are complicated and often require a collaborative response. For this reason, IPC and IPE initiatives have been recommended, implemented and supported at global, national, provincial and local levels (WHO). It was one such local initiative that piqued my interest in IPC and provided the focus for this scholarly project.

A number of interprofessional (IP) interventions at the post-licensure level are promoted in the literature as improving collaboration and positively impacting health outcomes (Suter et al., 2012; Zwarenstein, Goldman & Reeves, 2009). Unfortunately, it is not clear which interventions have the greatest impact on IPC. Why then is IPC being proclaimed so broadly? From many perspectives IPC policies seem to be a panacea for many of our health system's challenges (Frenk et al., 2010; Reeves, Goldman, & Zwarenstein, 2009a) but yet they have not been fully explored. It is these gaps in the literature around the implementation and operationalization of post-licensure interprofessional education and practice interventions along

with interprofessional interventions at the organizational level that will be explored in this work. The objective of this review is to assess the effect of post-licensure IP interventions (education, practice and organization) on IPC in the community care setting. This project will assist in addressing these gaps in the literature and the results are expected to inform my practice as a leader tasked with implementing an integrated care team.

Background

As a manager with the Interior Health Authority (IHA), I am responsible for the delivery of community care services to a geographic area of our city. We offer a variety of in-home and clinic services to people with acute, chronic, palliative or rehabilitative health care needs. These services are provided by a variety of health professionals including; nurses, physiotherapists, occupational therapists, social workers, respiratory therapists and community health workers. We have been made aware of upcoming changes to our service delivery model. The IHA leadership team has made it clear that the future of Home and Community Care (HCC) will involve a shift to integrated care teams. These integrated care teams will include a multidisciplinary HCC team and be aligned with physicians.

In February 2011, the British Columbia Ministry of Health Services (BCMOHS) released a document titled: *Home and community care care management strategy and action plan.* This document outlines "a vision and roadmap for the development of an integrated, population based approach for clinical practice within British Columbia" (p. 4). The BCMOHS envisions an integrated system of care in which patients have the majority of their needs met by high quality community-based health care and support services. "The goal of the HCC Care Management Strategy is to improve the quality of life and functional status of people with acute episodic, complex and chronic health conditions, and disabilities receiving home and community care

services“(p. 20). The BCMOHS asserts that the implementation of this integrated approach to care will have a profound positive impact on outcomes for clients, providers and the healthcare system.

Adopting such an approach to care will require a transformational shift in the manner in which HCC services are delivered. One of the fundamental changes required is a shift to an integrated model of care management. Such an integrated approach involves linking “the client, family physician and the community care team in partnership to support quality of life and better health outcomes” (p. 9). A key component of the new HCC care management approach involves the implementation of a multidisciplinary or integrated team-based approach with the clients’ family physician (BCMOHS, 2011). It is this key component of the strategy that IHA addresses with the implementation of the integrated care team model.

Reeves, Goldman & Zwarenstein (2009a) note that a key challenge when investigating IPC and IPE is a lack of consistency when defining these and other terms. In an attempt to provide clarity to the terms used throughout this paper a glossary of terms can be found in Appendix A.

Integrated Care Team

IHA has not yet been explicit as to the makeup and functioning of the integrated care team. We know the team will be comprised of a group of health care professionals aligned with the family physician. This team will at minimum include nurses, social workers, occupational therapists, physiotherapists, dieticians and respiratory therapists. The day-to-day functioning of the team remains unclear.

There are a number of approaches to teamwork in healthcare described in the literature. These approaches vary in the level of cooperation among the team and the level of knowledge,

skill and experience of the individual team members. The members of a multidisciplinary team work within the boundaries of their own profession and expertise; progress is discussed but there is not a clear understanding of the roles and functions of other team members. Client involvement may or may not occur in a multidisciplinary team. An interdisciplinary team is more client-centered with the client and professionals working together to set goals. With an interdisciplinary approach to care, team members readily share knowledge, trust the judgements of others and are influenced by others when making decisions (Johansson, Eklund & Gosman-Hedstrom, 2010). Although both IHA and BCMOHS are not explicit in their definition of an integrated care team, it is this notion of an interdisciplinary team that I believe best fits the integrated care team model.

IHA's move to integrated care teams is a step toward client-centered care and interdisciplinary practice but it is only a step. Client-centered care is only possible when true interdisciplinary practice occurs (Orchard, Curran & Kabene, 2005). True interdisciplinary practice is defined as "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" (p. 1), and is very different than the interdisciplinary team described by Johansson et al. (2010). It is this notion of client-centered interdisciplinary collaborative practice that I endeavour to support my team to achieve rather than simply to implement a new model of care delivery. For the integrated care team to practice in this manner interprofessional collaboration will be required.

Interprofessional Collaboration

A tremendous amount of literature has been published on IPC with over 1400 hits when the term is used in a Medline search. A number of systematic reviews, including Cochrane

reviews, have been completed. IPC reviews such as Jacobson & HDR Inc (2012), Johansson et al., (2010), Suter & Deutschlander (2010), Suter et al. (2012), and Zwarenstein et al. (2009) are focused on a number of different populations, conditions and outcomes, with most focused on patient and health system outcomes.

The overarching goal of IPC is to improve the health outcomes of those using the health care system (Canadian Interprofessional Health Collaborative (CIHC), 2010). This emphasis on positive or improved health outcomes is evident in the many definitions of IPC encountered in the literature. IPC is defined by Zwarenstein et al. (2009) as "the process in which different professional groups work together to positively impact health care" (p. 2). Others expand this definition to include more than merely "working together". The CIHC defines IPC as "the process of developing and maintaining effective interprofessional working relationships with learners, practitioners, patients/clients/families and communities to enable optimal health outcomes" (p. 8). The relationships professionals have with each other and those they are working with are an essential component of IPC. Respect, trust, shared decision-making, and partnerships are required for collaboration (CIHC).

IPC is not a new concept with reports of teamwork dating back to the early 1900's. An IP curriculum for students in 11 health care professions was developed in the early 1970's. In the 1980's, the WHO began promoting IPE. Although promoted by many, interprofessional collaboration and teamwork have taken many years to gain a solid footing in the health care system. Initial attempts to promote IPC were thwarted by a variety of barriers ranging from lack of priority by policy makers to professional territorialism to lack of evidence. Studies in this area are hard to conduct but evidence supporting the effectiveness of collaborative practice is beginning to emerge (Solomon, 2009).

IPC has been acknowledged in the literature as improving patient outcomes and cost effectiveness in a variety of health care settings (Bainbridge, Nasmith, Orchard & Wood, 2010; Interprofessional Education Collaborative Expert Panel (IECEP), 2012; Jacobson & HDR Inc., 2012; Suter et al., 2012; Suter & Deutschlander, 2010; WHO, 2010) as well as increasing provider satisfaction and workplace quality (Suter et al; Suter & Deutschlander; WHO). Because of these positive outcomes, IPE and IPC have become high priorities for decision and policy-makers in both health care and health education (Reeves et al., 2009a).

The lack of high level evidence to support collaborative practice is used by some as an opportunity to question the value of IPC and to avoid practice change (Solomon, 2009). IPC is an ideology currently promoted by governments and policy-makers with an expectation for healthcare organizations to adopt. Although, more evidence is accumulating with regards to the positive outcomes for patients, providers, and the healthcare system, IP collaborative practice is still a relatively new model of care and overall not well researched (Zwarenstein et al., 2009). Despite the current lack of evidence IPC continues to be endorsed through policy initiatives.

Interprofessional interventions. IP interventions are those practices used specifically to enhance IPC (Suter et al., 2012). There are a number of documents and frameworks that outline such interventions, as well as barriers and enablers to collaborative practice (Bainbridge et al., 2010; CIHC, 2010; Conference Board of Canada [CBC], 2012; IECEP, 2011; Orchard et al., 2005; WHO, 2010). A review of these documents provides some insight into the operationalization of IPC at various levels in health care organizations.

In the context of IP primary care teams, The Conference Board of Canada identifies barriers to collaboration occurring at the individual, practice, and system level. These barriers to IPC have been summarized in Table 1.

Table 1

Barriers to Interprofessional Collaboration (CBC, 2012)

Individual-Level Barriers	Practice-Level Barriers	System-Level Barriers
Lack of role clarity and trust. Perceived and projected hierarchical roles and relationships.	Lack of strong governance structure and leadership to manage complex practices. Difficulties in establishing appropriate skill mix and team size. Insufficient space and time for communication and collaboration. Inadequate communication mechanisms and technology.	Inadequate IP education and training. Sub-optimal funding models. Lack of appropriate monitoring and evaluation to inform change.

Barriers and enablers to IPC have also been identified by Orchard et al. (2005). Organizational structures, power imbalances and role socialization are identified as broad categories representing barriers. Role clarification, role valuing, developing trusting relationships and power sharing are identified as enablers to interdisciplinary collaborative professional practice (Orchard et al.).

The WHO's (2010) *Framework for action on interprofessional education & collaborative practice* identifies mechanisms that influence collaborative practice. These mechanisms are divided into three themes: "institutional support mechanisms (i.e. governance models, structured protocols, shared operating resources, personnel policies, supportive management practices); working culture mechanisms (i.e. communications strategies, conflict resolution policies, shared decision-making processes); and environmental mechanisms (i.e. built environment, facilities, space design) (WHO, p. 11).

Consideration of the identified barriers, enablers and mechanisms at the leadership level will seemingly influence collaborative practice but it is not entirely clear what front-line leaders can do to support such practice.

Competencies for interprofessional collaboration. Competencies are developed to capture the skills, knowledge, attitudes and behaviors required to be successful in a given profession (CIHC, 2010). Collaborative competencies are those competencies health care professionals require for effective IPC (CIHC). A number of organizations, groups and scholars have developed competencies for IPC to be used in the curriculum of health care professionals (Bainbridge et al., 2010; CIHC 2010; IECEP, 2011; WHO, 2010). There are many similarities and some differences in these frameworks. The IP groups creating these IP competencies are largely in agreement around inclusion of the core concepts of communication, collaboration, patient-centered care and teamwork (Reeves, 2012)

The CIHC supported one such group to develop a Canadian competency framework for IPC (Bainbridge et al., 2010). This national IP competency framework identifies six domains that are required for IPC: (a) IP communication, (b) patient/client/family/community-centered care, (c) role clarification, (d) team functioning, (e) collaborative leadership, and (f) interprofessional conflict resolution (CIHC, 2010). Two of the domains, IP communication and patient/client/family/community centered care, support and underpin the other four domains (CIHC). Each domain highlights the knowledge, skills, attitudes and values that are required for IPC (CIHC). There is a competency statement and several descriptors within each domain. No one domain is more important than the others as all are required for IPC (Bainbridge et al.).

The CIHC (2010) competency framework can be used to inform both education and practice by building upon the learner's existing IPC knowledge and skills (Bainbridge et al.,

2010). This framework provides a clear understanding of the characteristics that are required by the collaborative practitioner (CIHC). These competencies can be used in practice to build upon the existing knowledge, values, skills, attitudes and judgements of practitioners to further develop their abilities to be successful in the collaborative practice setting (CIHC). Unfortunately, there is not yet empirical evidence regarding the effectiveness of IP competencies to support IPC (Reeves, 2012).

Classification of interprofessional interventions. Reeves et al. (2009a) developed a framework to classify IP interventions into three areas: IP education interventions, IP practice interventions and IP organization interventions. Interventions from each classification target different areas and can be used to improve IPC, service delivery and patient outcomes (Reeves et al., 2009a).

Interprofessional education interventions. For collaborative practice to occur, IPE is required (WHO, 2010). IPE occurs when "two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (WHO, p. 13). IPE can take place at both the pre- and post-licensure levels and in a variety of clinical settings (WHO). IPE interventions target the individual with the intent of impacting their knowledge, skills and attitudes (Reeves et al., 2009b). Such an approach results in health care professionals who understand and appreciate the contributions of others to meet the needs of their most complex clients (Barr, 2012). Effective IPE fosters respect between professionals, eliminates stereotypes, and encourages a strong patient-centered ethic (WHO).

Practice within teams has become more predominant as health care has become increasingly complex (Frenk et al., 2010). IPE at the undergraduate level is required to prepare health professionals who are equipped to function within a team (Frenk et al.). Policy makers

from a number of countries, including Canada, have recommended health professional curriculum changes to equip new graduates with the competencies required to facilitate collaborative practice (Bainbridge et al., 2010). Much has been written regarding IPE and collaborative practice exposure at a pre-licensure level (Bainbridge et al., 2009; Frenk et al., 2010; Gilbert, Yan & Hoffman, 2010; IECEP, 2011; WHO, 2010). Despite the emphasis on pre-licensure IPE in the literature, Barr (2012) asserts that post-licensure IPE can have a more immediate impact on practice. Even though the implementation of post-licensure IPE could have a positive effect on IPC there exists a gap in the literature. Effective implementation and operationalization of post-licensure IPE has not been thoroughly explored.

There is much emphasis in the literature on IPE. Interprofessional education, while important, will not in isolation create an environment of interprofessional collaborative practice (Barr, 2012; IECEP, 2011; WHO, 2010). Barr recommends that integrated care and IP practice require both engagement of the workforce and organizational support. The WHO acknowledges that as well as IPE, institutional support, working culture, and environmental elements influence IPC.

Interprofessional practice interventions. There are a number of mechanisms that could be put into place to support collaborative practice in the workplace (WHO, 2010). IPC practice-based interventions include those activities and strategies used in health care settings to improve the interactions and/or processes among different professional groups (Zwarenstein et al., 2009). IP practice interventions target practice based processes, such as work processes, work routines and teamwork (Reeves et al., 2009a). Communication tools, team meetings, and referral processes are examples of IP practice interventions (Reeves et al.). Although, some broad discussions occur around IP practice interventions in the literature there exists a gap in the

operationalization of such interventions. It is unclear how one goes about implementing iIP practice interventions.

Interprofessional organization interventions. IP interventions at the organizational level include organizational structures or systems that improve collaboration and the quality of care (Suter et al., 2010). Organizational interventions address organizational structures such as culture, policies, funding, space and human resources (Reeves et al, 2009a; Suter et al.). Staffing policies, work space and organizational culture are examples of IP organization interventions (Reeves et al.). Again, a gap exists around the operationalization of IP organizational interventions.

Context

The context in which IP collaborative practice occurs cannot be ignored. It is complex, with a number of factors both positively and negatively influencing IPC at the post-licensure level. Figure 1 depicts this complexity. Team functioning and ultimately IPC are affected by a plethora of individual, professional, organizational and structural factors (Reeves, Lewin, Espin & Zwarenstein, 2010).

Individuals participating in IPC bring their own set of experiences, education, knowledge, values and beliefs, all of which are both personal as well as professional in nature. These past experiences can have both a positive and negative impact on IPC. For example, those who have had positive experiences in collaborative environments are more likely to practice collaboratively (Solomon, 2009).

Each health profession has its own unique culture which includes values, beliefs, attitudes, customs and behaviors. Professional cultures were influenced by and reflect the historic factors, social class and gender issues present as professions developed. Each health care

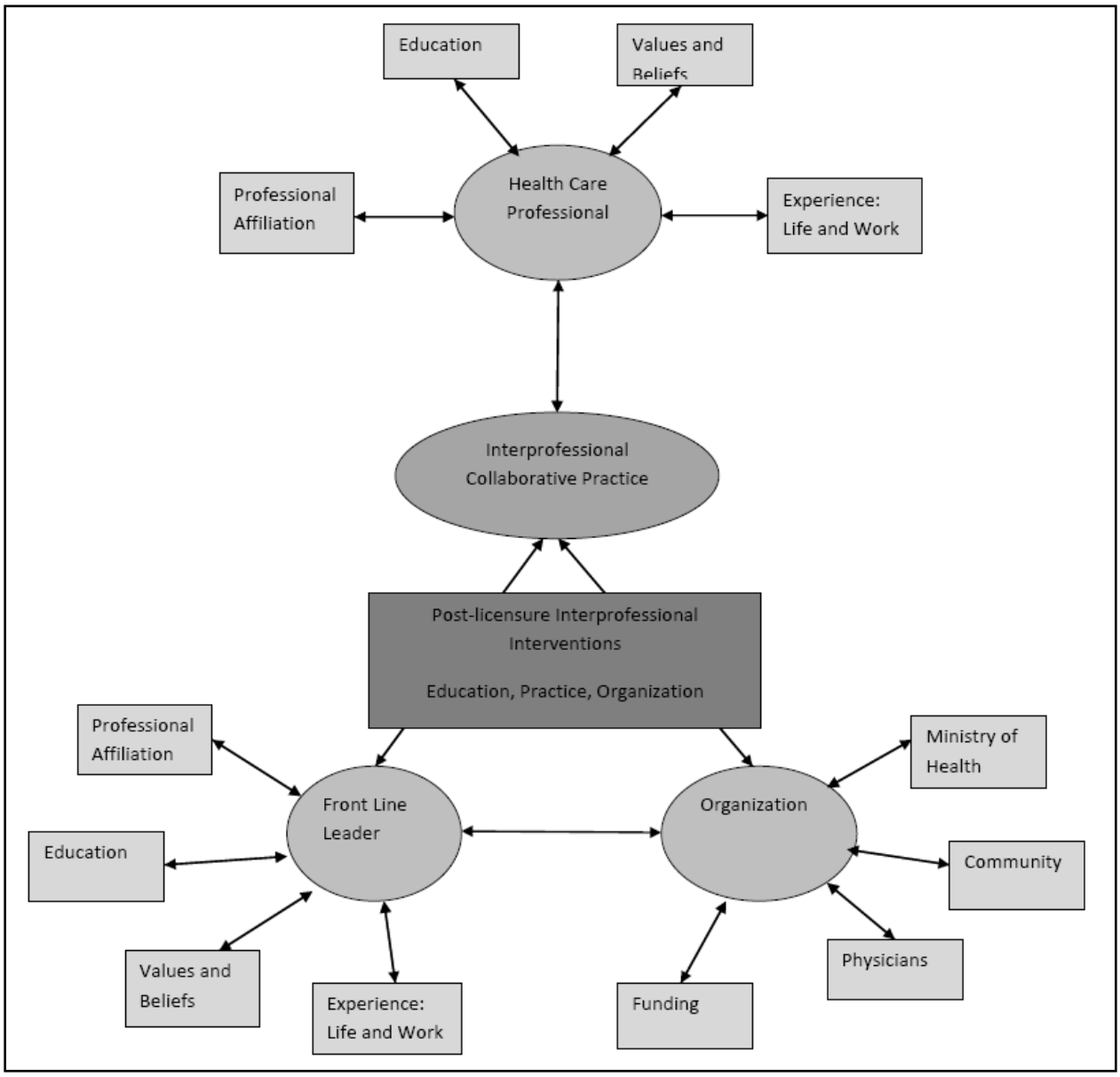
profession has struggled to define its own identity, scope of practice, and roles and responsibilities. The values, knowledge, culture, problem-solving approaches, and language of each profession are reinforced by the educational experiences and socialization process that occurs during the training of professionals (Hall, 2005).

Reinders' (2008) paper discussing neoliberal managerialism and its impact on professionalism adds an additional layer of complexity. Professionals have a responsibility not only to uphold the standards of excellence of their profession but also to uphold the goals and values of the organization. Since individual professionals and organizations come with their own set of values and beliefs, conflict can result and many professionals are left feeling that the goals of the organization are more important than their own professional and personal responsibilities (Reinders).

This is further complicated by the influence and direction of the organization as it responds to the many influencing factors it is exposed to. As previously discussed, the impetus for this work is an organizational decision to shift to a care delivery model utilizing integrated care teams. Although important and worth considering, the factors influencing this decision are largely unknown to those required to support and make this practice change. Debating the wisdom of the decision does not contribute to the purpose of this paper. The importance of context is well understood by this author, and although IPC is greatly influenced by context, it is not the purpose of this work. The focus of this review is post-licensure IP interventions as depicted by the dark grey box in Figure 1.

Figure 1

Context of Interprofessional Collaboration and Interprofessional Interventions



Methodology

In an effort to provide some direction regarding the operationalization of IPC, a systematic literature review was undertaken. The document *Systematic reviews: CRD's guidance for undertaking reviews in health care* (Centre for Reviews and Dissemination [CRD], 2009) was used to direct the review. Other systematic reviews were used to provide further direction

and clarification. In particular, a review of the impact of IPC on health human resources completed by Suter & Deutschlander (2010) provided significant guidance to the researcher for this project.

Review Focus and Research Questions

The objective of this review was to assess the effect of post-licensure IP interventions (education, practice and organization) on IPC in the community care setting. Recognizing that IPC is impacted by a multitude of factors including context, the focus of this review was on the area depicted by the darkest box in Figure 1. The specific research questions addressed were:

- How do post-licensure IP education, practice and organization interventions impact IPC in the community care setting?
- How are post-licensure IP education, practice and organization interventions operationalized in the community care setting?
- Which post-licensure IP interventions have the greatest impact on IPC in the community care setting?

Based on the research objective and the research questions inclusion criteria were developed and included the following:

- Post-licensure IP intervention(s) (education, practice and/or organization),
- Outcome measurement of interprofessional collaboration,
- Community, home health or primary care setting with no parameters around client populations,
- Country with similar health care system as Canada (including but not limited to Great Britain, Australia, United States, Norway, and Sweden),
- Qualitative and/or quantitative research (including empirical and evaluation research).

Literature Search

This review included both peer reviewed and grey literature published in English between January 2008 and May 2013, meeting the inclusion criteria outlined above. Concept and review articles were not included. Only those articles meeting all five criteria were selected for inclusion.

Peer-reviewed literature. The health and business literature was searched for articles that described the effect of post-licensure IP interventions on IPC in the community care setting. Search terms such as interprofessional, intraprofessional, interdisciplinary, multidisciplinary and transdisciplinary were combined with terms such as collaboration, collaborative practice, integrated care, team work and community care, primary care. See Appendix B for details of the search strategies for each database. The initial search identified 2747 relevant articles. A quick review of the title for relevancy identified 992 articles that warranted an abstract review. Of those abstracts reviewed 107 articles were chosen to be read in full. In the end, 11 peer-reviewed articles met all of the inclusion criteria (see Table 2), and were chosen to be included in this review.

Table 2

Included Peer-Reviewed Literature

Author(s) and Date	Title
Agarwal, Idenouye, Hilts, & Risdon, 2008	Development of a program for improving interprofessional relationships through intentional conversations in primary care.
Bruner, Waite & Davey, 2011	Providers' perspectives on collaboration.
Chan et al, 2010	Finding common ground? Evaluating an intervention to improve teamwork among primary health-care professional.
Clark & Smith, 2009	Promoting collaborative practice for children of parents with mental illness and their families.
Drew, Jones & Norton, 2010	Team effectiveness in primary care networks in Alberta.
Emery et al, 2011	Community long-term care teams: assessing team fitness
Howard, Brazil, Akhtar-Danesh & Agarwal, 2011	Self-reported teamwork in family health team practice in Ontario: organizational and cultural predictors of team climate.
Legault et al, 2012	Difficulties encountered in collaborative care: logistics trumps desire.
Martinussen et al, 2012	Improving interprofessional collaboration in a community setting; relationships with burnout, engagement and service quality.
Robben et al, 2012	Impact of interprofessional education on collaboration attitudes, skills, and behavior among primary care professionals.
Thylefors, 2012	Does time matter? Exploring the relationship between interdependent teamwork and time allocation in Swedish interprofessional teams.

Grey literature. Relevant information about IPC can be found outside of the traditional peer-reviewed literature (Suter & Deutschlander, 2010) therefore a number of websites were reviewed for relevant documents. A list of the websites reviewed is found in Appendix C.

In an effort to promote interprofessional education for collaborative patient-centred practice (IECPCP), Health Canada funded a number of projects The evaluation reports for 20 of these projects can be found on the Canadian Interprofessional Health Collaborative's (CIHC) website (www.cihc.ca). These reports were reviewed using the same inclusion criteria as the peer-reviewed literature and 3 were included in this review.

Another group of projects funded by Health Canada and administered by the Western and Northern Health Human Resources Planning Forum was identified. The purpose of the Developing Interprofessional Collaborative Practice and Learning Environments across the Continuum of Care in Western and Northern Canada project (ICP&LE project) was to develop, implement and evaluate innovative and effective IPC and learning approaches to healthcare delivery in a variety of practice settings. Through this initiative, nine ICP&LE projects were undertaken. Unfortunately, only one evaluated and reported outcomes with the other eight reporting only process evaluation. As this one project report met the inclusion criteria it was included in this review.

No similar projects for consideration were identified during the website review process. As this review is the work of one reviewer the website review process was by no means exhaustive. Websites were reviewed when the researcher came across the sites during the literature review process. Table 3 outlines the included grey literature.

Table 3

Included Grey Literature

Author(s) and Date	Title
Forchuk & Vingilis, 2008	Creating interprofessional collaborative teams for comprehensive mental health services (CIPHER-MH); final report.
Grymonpre, van Inveveld & Boustcha, 2008	Interprofessional education for geriatric care program: IEGC Project.
Partners for Interprofessional Cancer Education (2008)	Partners for interprofessional cancer education (PICE): cultivating communities of practice for collaborative care.
Suter & Deutschlander, 2011	Developing sustainable interprofessional collaborative practice and learning environments: preliminary site report.

Data Extraction

Briss et al. (2000) recommended a standard abstraction form be used to record information from the included studies about the; 1) intervention studied, 2) study context (e.g. population and setting), 3) evaluation design, 4) study quality and 5) results. Each article was reviewed and the information compiled in a data extraction table developed for this purpose (see Appendix D).

Study Quality

All studies were not of the same quality; even those with the same design. Flaws in the design or conduct of a study can result in bias which can impact the outcomes reported. It was therefore important to determine the quality of the studies included in the review to determine the strength of the evidence reported (CRD, 2009).

Randomized control trials (RCTs) are considered to be the most appropriate method of testing an intervention (CRD, 2009). Such study designs are not entirely appropriate or even possible in health systems research (Suter & Deutschlander, 2010). For this reason this review was not limited to RCTs, and included studies using a variety of designs as long as the inclusion criteria were met.

Suter & Deutschlander (2010) adapted an approach by Briss et al. (2000) to rate the quality of the studies in their review and knowledge synthesis. This approach "rated the quality of the studies based on a number of criteria including strength of the study design, quality of study execution, and consistency of the observed effects" (Suter & Deutschlander, p. 26). Figure 2 outlines the application of the criteria of the study quality criteria. Deutschlander (personal communication, September 6, 2013) reported the tool developed and adapted for use in their systematic review (Suter & Deutschlander) worked well to rate the quality of the studies. Since

the studies in their review were closely related to those included in this review, the same approach was used to rate study quality. The study quality of each included article was assessed using the criteria outlined in Figure 2. Suter & Deutschlander (2010) used a table to clearly display this information (p. 77). This table was adapted and used to outline the quality of the included studies (see Appendix E). Three articles were randomly selected, reviewed and rated by another researcher to audit the quality ratings completed by the author of this paper. Ratings were very similar to the original ratings, therefore there was confidence quality ratings of the articles conducted by the author were reasonably accurate.

Strength of the Evidence

Both study design and quality of study execution were important considerations when determining the effectiveness of interventions. Sufficient and strong evidence of effectiveness can be supported by either a small number of studies with the strong execution of a suitable design or a large number of studies with a less suitable design and weaker execution as long as the reported effect was consistent in size and direction. Since the strength of the evidence directly impacts the strength of the recommendations made it was important to be transparent and clear regarding the strength of the evidence of this systematic review. Effectiveness of the evidence was rated as strong, sufficient or insufficient based on: 1) the number of available studies, 2) the strength of study design and execution, and 3) the size and consistency of the reported effect (Briss et al, 2000). Based on these aspects of the included studies and projects (see Appendix E for details) the strength of the evidence reported in the included studies was determined.

Figure 2

Application of Study Quality Criteria (Suter & Deutschlander, 2010, p. 27)

"The criteria were applied in the following way:

Type of study design: describes the suitability of the study design for assessing effectiveness.

- Strong: concurrent comparison groups and prospective measurement of exposure and outcome.
- Moderate: retrospective designs or multiple pre- or post-measurements but no comparison group.
- Weak: single pre- and post-measurements without concurrent comparison group; exposure and outcome measured in a single group at the same point in time.

Quality of study execution: considers a number of factors that threaten the validity of the study. One point is allocated for each of the criteria that has been met.

- Sampling procedure: randomized allocation of participants (as opposed to voluntary or mandatory).
- Measurement tools: use of quantitative tools (surveys, staffing data bases).
- Validity/reliability testing: use of validated measurement tools (either previously validated or psychometric testing performed in the study); for qualitative data: description of procedures that are equivalent of reliability/validity testing in quantitative tools (such as audit trail, member checking).
- Statistical testing of results: differences between intervention and control groups or pre-post are established using statistical tests.
- Confounders: alternative explanations that threaten the validity of the study are considered (e.g., lack of comparability between study participants, additional resources and supports, maturation of participants).
- Response rate: response rate is mentioned and higher than 65%.

A total score of 6 can be obtained with 5-6 points indicating good quality, 3-4 points fair quality, and 0-2 points insufficient quality. In some studies, psychometric testing is not applicable; in those cases a maximum score of 5 is possible with 4-5 points indicating good quality, 2-3 points fair quality, and 0-1 point insufficient quality.

Direction of the effect: indicates if the effect was positive, negative or neutral.

Results

Since the focus of this literature review was the use of IP interventions to promote IPC in the community care setting, the results will be presented using the classification of IP interventions developed by Reeves et al. (2009a) as a framework. Details of this classification system were provided earlier in this paper (see p. 16). In addition to the evaluation of IP interventions used, a number of the included studies investigated and discussed the barriers and facilitators to IPC identified by the study participants and researchers (Chan et al., 2010; Clark & Smith, 2009; Drew, Jones & Norton, 2010; Howard, Brazil, Akhtar-Danesh & Agarwal, 2011; Legault et al., 2012; Partners for Interprofessional Cancer Education (PICE), 2008). This information will be used to augment discussion of the findings of this review to provide further insight and clarity.

There were a variety of IP interventions used and investigated by the included studies. In an attempt to provide clarity and a broad overview, a summary of the interprofessional interventions used is presented in Figure 3.

Mixed Interprofessional Interventions

Four of the 15 included studies or projects (Chan et al., 2010; Clark & Smith, 2009; Martinussen, Adolfsen, Lauritzen & Richardsen, 2012; & Suter & Deutschlander, 2011) used a mix of education, practice and organization interventions making it difficult if not impossible to determine which interventions were responsible for the reported changes. All of these studies reported a positive impact on IPC.

Chan et al. (2010) used an IPE workshop, structured facilitation, and IP practice interventions in their Team-link project in an effort to improve teamwork in 26 multidisciplinary teams in primary care settings. The one-evening workshop included a description of the intervention, discussion of the principles of teamwork, and presentation of a case study using

Figure 3

Interprofessional Interventions Used

Author(s)	IP Education Interventions			IP Practice Interventions													IP Organization Interventions	
	Education Workshop	Intentional Conversations	Focus Group Discussion	Referral Resources	Care Plan Templates	Patient Education Materials	Billing System	Formation of IP Teams	Assess Team Function	Discuss Team Function	IP Mentoring Strategy	Team Rules	Team Vision	Discussion of Implementation Strategies	Improved Access to GPs	Restructured Team Meetings	Facilitator or Team Leader	Advisory Committee
Agarwal et al.	√	√																
Bruner et al.			√															
Chan et al.	√			√	√	√	√										√	
Clark et al.	√																√	√
Drew et al.								√										
Emery et al									√	√								
Forchuk et al.	√																	
Grymonpre et al	√																	
Howard et al								√										
Legault et al								√										
Martinussen et al.	√							√										√
PICE	√																	
Robben et al	√																	
Suter et al.	√										√	√	√	√	√	√	√	
Thylefors								√										

role playing. The facilitator had a number of resources (i.e. referral directory, referral forms, referral criteria, care plan template, patient education materials and billing systems information) to share with the teams. The facilitator made three formal site visits along with informal site visits and phone calls to address problems and review progress. Qualitative data were collected from the facilitators throughout the project, general practitioners (GPs) at baseline and six months, and the allied health professionals (AHPs) at six months. The facilitators recorded their observations following each site visit to track the intervention process and record any changes to communication pathways. The GPs provided reports in response to practice audits which listed the clinical care measures of each practice and compared the results to division and national averages. The AHPs were surveyed about referral satisfaction, means of communication, benefits of a new Medicare payment process, and the roles of the practice nurses. Further details of the survey were not provided. Enhanced communication and information sharing and ultimately improved IPC, were reported to have resulted from these interventions. This was evidenced by the following study outcomes:

- Patients provided feedback to their GPs and practice staff about their health conditions and AHP consultations.
- Practice staff provided support for patients to self-manage their care.
- Three-way communication took place between GPs, AHPs and patients to track progress and set goals.
- Communication between practice team and AHPs improved.

Clark & Smith (2009) evaluated the Protocol to Enhance Interagency Responses for Children of Parents with a Mental Illness. The protocol provided a framework to be used by each department or agency to ensure that the necessary policy, practices, processes, resources, and

training were in place to promote collaboration. The staff participated in three one-day workshops that focussed on a variety of mental health and collaborative practice topics. The Advisory Committee brought together key departments, agencies, experts, and consumers to provide oversight and to discuss implementation issues. An Interagency Committee, comprised of project leads was formed. The project leads introduced the protocol to the staff and supported local collaboration and innovation. Data were collected from staff, and Interagency and Advisory Committee members using a written survey exploring perceptions of collaborative practice at baseline and 12 months post-intervention. The survey was developed for this study and included ten items regarding collaborative work with children of parents with mental illness. Two items required an open-ended response. Examples of the items include: (a) how often the staff member participated in collaborative work, (b) whether the level of collaborative activity increased, and (c) how often the staff member communicated with others within the agency. Increased collaborative activity and increased communication were reported by participants.

Martinussen et al. (2012) used the formation of IP teams and IPE as interventions to improve IPC in Child Mental Health. The intervention group was formed into IP teams and a variety of courses were presented. Nine one and two-day courses were offered on topics such as collaboration between services, and training in the use of specific mental health measurement instruments and specific interventions such as dealing with children of mentally ill patents and alcohol prevention among adolescents. A network comprised of a coordinator and representatives from each team was formed. The network met monthly to discuss the teams' experiences related to collaboration. The comparison group continued with usual practice and received no interventions. A questionnaire measuring job demands, job resource, burnout and collaboration was administered to the comparison group at baseline and to the intervention group

post-intervention. Collaboration was measured with eight items developed for this study, and further detail is not provided. Participation in the project resulted in a significant increase in the level of perceived collaboration.

Suter & Deutschlander (2011) also used a multi-pronged approach in their work promoting collaborative practice and learning environments in two outpatient mental health clinics. A baseline assessment was conducted to understand the current levels of collaborative practice, structures and processes in place to support collaborative practice and opportunities for improvement. Through this process, a number of opportunities to improve collaborative practice were identified and outcomes were targeted for improvement. Two research team members acted as external facilitators and worked closely with the clinic managers and their teams. The facilitators met every two weeks with the teams to guide discussions about areas for change and to assist with the design of the strategies. The CIHC collaborative practice competency framework formed the basis of these discussions. A variety of education, practice and organization IP interventions were implemented at the two sites. Some of the interventions were used at both sites: (a) an IP mentoring strategy for students was implemented, (b) a series of three education sessions in areas of common interest with a focus on collaborative practice approaches were organized, (c) ongoing maintenance of strategies introduced was discussed, (d) access to family physicians for unattached clients was improved, and (e) a one-day and two half-day team retreats to conduct focussed work on the above strategies were held. In addition to these interventions Clinic 1 (a) accessed an addictions counselor to model treatment approaches, (b) developed team rules, and (c) created a shared vision statement. Clinic 2 (a) restructured their team meetings, (b) conducted a comprehensive review of the patient journey through the program, and (c) developed a protocol for co-sharing of complex patients. The baseline

assessment was done using an environmental checklist, interviews and a social network survey. Post-intervention staff were interviewed. No additional data collection information was provided. These IP interventions resulted in an increased (a) awareness of team dynamics, (b) awareness of team practices, (c) awareness of opportunities for collaboration, (d) team cohesion, (e) team functioning, (e) knowledge and skill around IPC competencies, (f) collaboration, and (g) effectiveness of team meetings.

Interprofessional Education Interventions

Six studies investigated the use of IP education interventions to enhance IPC (Agarwal, Idenouye, Hilts & Risdon, 2008; Bruner, Waite & Davey, 2011; Forchuk & Vingilis, 2008; Grymonpre, van Ineveld & Boustcha, 2008; PICE, 2008 & Robben et al., 2012). All, except Grymonpre et al., reported at least a minimal, although not always significant, positive effect on the IPC knowledge, skill or practice of the participants.

Agarwal et al.'s (2008) McMaster Interprofessional Mentorship and Evaluation (MIME) program was unique in its approach. Interdisciplinary pairs were established and encouraged to consider different perspectives and roles while having intentional conversations about practice related situations. The goal was to have and to report on seven face-to-face conversations, between the introductory and closing workshops of the program. At the introductory workshop participants practiced the skill of intentional conversation and familiarized themselves with the data collection tools. The closing workshop allowed for debriefing and evaluation of the program. Data were collected through focus groups, worksheets and reflections, program evaluation, the Attitudes toward Health Professionals Questionnaire (Lindqvist, Duncan, Shepstone, Watts, & Pearce, 2005) and the Quality of Worklife Survey (no reference given). Both surveys were administered before and after the intervention and no discussion regarding the

reliability and validity of either survey is provided. Participants increased their knowledge of their partners' discipline and expanded their IP interactions.

Bruner et al. (2011) examined how participation in a focus group discussion exploring IPC affected the providers' views of collaboration. Five self-report quantitative scales measuring collaboration were used at base-line and three to eight months post-intervention. The Collaboration and Satisfaction about Care Decisions Scale (Baggs, J., 1994; Pollard, Miers & Gilchrist, 2004; Pollard, Miers & Gilchrist, 2005) and the University of the West of England Interprofessional Questionnaire (American College of Physicians, 2009; Wing, O'Grady & Langeher, 2005) were used and are reported to be reliable and valid tools. The University of the West of England Interprofessional Questionnaire is comprised of 4 subscales: (a) Communication and Teamwork Scale, (b) Interprofessional Learning Scale, (c) Interprofessional Interaction Scale, and (d) Interprofessional Relationships Scale. References were not provided for the subscales. Only the Collaboration and Satisfaction about Care Decisions Scale showed a significant and positive change with most measures showing a non-significant improvement in collaboration after participating in the focus group.

The Creating Interprofessional Collaborative teams for Comprehensive Mental Health Services (CIPHER-MH) project (Forchuk & Vingilis, 2008) was undertaken with the intent of facilitating IP collaborative mental health care in both education and practice settings. Five full-day workshops focused on IPC were held for practitioners. The data collection tools used to measure impact included; focus groups, demographic questionnaires, workshop feedback forms, flip charts, group discussion notes and the Interprofessional Interest Survey (no reference given), the Interprofessional Perception Scale (Golin & Ducanis, 1981), the Attitudes toward Health Care Teams Scale (Heinemann, Schmitt, Farrell, & Braillier, 1999), the Collaboration and

Satisfaction about Care Decisions Survey (Baggs et al., 1999), and the Interdisciplinary Team Performance Scale (Temkin-Greener, Gross, Kunitz, & Mukamel, 2004) and the Interprofessional Socialization and Valuing Scale. The Interprofessional Socialization and Valuing Scale was developed for this project and had not been validated. The reliability and validity of the other surveys was not discussed. Data were collected at appropriate phases of the project. What the researchers considered appropriate phases was not clearly defined. Participants reported an increase in awareness, understanding, appreciation and valuing of IPC. Workshop participants also reported an increase in their comfort and ability in a range of IPC skills (Forchuk & Vingilis).

Through The Education for Geriatric Care (IEGC) Project (Grymonpre et al., 2008) three geriatric day hospital clinical teams received IPE. The education modules provided teaching and learning activities centered on seven core IP competencies: communication, conflict resolution, disciplinary articulation, dynamics, goal directedness, flexibility, and leadership. No additional detail is provided. Data were collected at baseline, immediately after and six months post-intervention through focus groups, participant journals and questionnaires. Nineteen tools were used to capture information in six categories; 1) attitudes and perceptions, 2) knowledge and skills, 3) behaviour, 4) organizational practices, and 5) benefit and/or burden to clients. No detail as to specific measurement tools and scales used was provided in the project report. No statistical difference was found between intervention and control group participants at baseline, post-program and six month follow-up regarding acquisition of IPC knowledge and skills (Grymonpre et al.).

Cancer Care Nova Scotia's (CCNS) Interprofessional Core Curriculum (ICC) (PICE, 2008) involved developing IP facilitators to provide IPE in an effort to improve collaborative

patient-centered practice. The IP facilitators were oncology and palliative care experts from a variety of health professions who attended a five day competency-based facilitator program. A range of topics were covered in this training program, including: facilitation skills, adult learning theory, conflict management, interprofessional team work and First Nations cultural safety and sensitivity. A community of practice among the facilitators was promoted using an interactive website and a face-to-face meeting. The ICC modules were delivered by teams of two trained IP facilitators to community-based primary care health professionals caring for those with cancer. The ten, three and a half hour ICC modules were offered face-to-face and by teleheath. The modules covered pain and symptom management, chemotherapy, radiation therapy, oncologic emergencies, psychosocial side effects and pediatric cancer, and were designed to emphasize IP approaches to care. IP learning was encouraged by interactive discussion facilitated by the IP Facilitators. The IP facilitators completed the Attitudes toward Interprofessional Learning Scale (Pollard, Miers, & Gilchrist, 2005), the Interprofessional Facilitation Scale, the Intended Changes to IP Facilitation Questionnaire and the Follow-up to Changes Questionnaire pre and one year post-program. All of the instruments used were developed specifically for this project except for The Attitudes toward Interprofessional Learning Scale. Information regarding the validity and reliability of the tools used was not provided. The facilitator group also completed a program evaluation. The ICC participants completed a workshop evaluation questionnaire, the Intended Changes to IP Interactions Questionnaire immediately post-workshop. This group then completed the Follow-up to Changes Questionnaire three months post-workshop. The facilitators reported an increased awareness of IPC and improved facilitation skills. Participants in the ICC reported (a) an increased awareness of the benefits of interprofessional collaborative patient-centered practice, (b) an increased understanding of the roles and responsibilities of other HPs,

(c) consideration of or intention to make changes to IP practice and (d) changes in IP practice (PICE).

Robben et al. (2012) evaluated an IPE program for a multidisciplinary group of primary care professionals. The intervention group participated in an IPE program comprised of three three-hour workshops covering topics of frailty and IPC. Pre and post-intervention data were collected using semi-structured interviews and the Interprofessional Attitudes Questionnaire (Carpenter, 1995a; Carpenter 1995b), the Attitudes toward Health Care Teams Scale (Heinemann, Schmitt, Farell & Brallier, 1999), and the Team Skills Scale (Hepburn, Tsukuda & Fraser, 1998). Information regarding the reliability and validity of these tools was not provided. There was a small but significant improvement in participants' overall IP attitudes and self-reported team skills post-intervention. No change in attitudes toward geriatric teams was reported.

All four of the studies using a mix of IP interventions used IPE in combination with practice or organization interventions (Chan et al., 2010; Clark & Smith, 2009; Martinussen et al., 2012; Suter & Deutschlander, 2011). All of these studies reported a positive impact on IPC. Although it is not possible to determine which interventions were responsible for the changes measured, it is likely that IPE played at least some role in increasing IPC. Many of the participants of all included studies in the review identified IPE as a facilitator to IPC (Agarwal et al., 2008; Bruner et al., 2022; Chan et al.; Clark & Smith; Drew et al., 2010; Emery et al, 2011; Forchuk & Vingilis, 2008; Legault et al., 2012; Martinussen et al.; PICE, 2008; Robben et al., 2008; Suter & Deutschlander), which lends additional support to the notion that IPE has a positive impact on IPC.

Learning through IPE had a positive impact on IPC in a number of ways. Awareness of the benefits of IPC and an understanding of IPC itself resulted from participation in IPE (Forchuk & Vingilis, 2008; PICE, 2008; Robben et al., 2012; Suter & Deutschlander, 2011). The participants in the PICE study noted that an increase in their personal knowledge in their practice area was a facilitator to IPC. The more confidence they had in their own knowledge the more likely they were to participate in IPC (PICE). Learning the specific skills and competencies required for IPC and teamwork was valuable (Robben et al.; Forchuk & Vingilis; Suter & Deutschlander). An increase in the participants' confidence working with others was noted as a facilitator to IPC by PICE.

Increased understanding of and appreciation for other disciplines was identified as an outcome of IPE (Agarwal et al., 2008; PICE, 2008; Robben et al., 2012). This increase in knowledge resulted in an improved understanding of the roles and contributions of different disciplines (Agarwal et al.; PICE; Robben et al.) which contributed to IPC (Emery, Millheiser, Garcia, Marquine & Golden, 2011; Legault et al., 2012). Conversely, challenges with professional roles and responsibilities were identified as a barrier to IPC by the participants in the Legault et al. study. The IP nature of IPE and attending with local professionals were identified as facilitators to IPC (Robben et al., 2008; Clark & Smith, 2009; Martinussen et al., 2012). In particular, the participants in the Emery et al. (2011) and PICE (2008) studies found that learning from and interacting with other health care providers were facilitators of IPC, as learning from each other helped develop trust (Emery et al.).

Not only did participation in IPE result in improvements in attitude, knowledge and skill about IPC, but a change in the participants' collaborative practice was reported by both Agarwal

et al. (2008) and Robben et al. (2012), with participants in the Grymonpre et al., (2008) study reporting their intention to use the content in their practice in the future.

In contrast, Grymonpre et al. (2008) found there was no difference in IPC knowledge and skills before and after receiving IPE. The researchers suggested this may have been the result of (a) selection bias, with those with a keen interested in IPC more likely volunteering to participate, and (b) ongoing opportunities to participate in IPE not related to the project (Grymonpre et al.). Most of the IPC measures used by Bruner et al. (2011) also showed a non-significant improvement with only one scale measuring collaboration showing a significant and positive change. The mission of the Primary Health Center, where Bruner et al. did their research, was to provide transdisciplinary care therefore staff working in the center likely had a tendency toward IPC before participation with the potential experience to contribute to the minimal change in IPC reported.

Interprofessional Practice Interventions

The work of Drew et al. (2010), Emery et al. (2011), Legault et al. (2012), & Thylefors, (2012) focussed on the implementation and evaluation of IP practice interventions. Emery et al reported a marginal increase in team cohesiveness with the other three studies reporting on the barriers and facilitators to IPC of existing IP teams.

Drew et al. (2010) explored the level of perceived team effectiveness in a number of Primary Care Networks and identified strategies that related to team effectiveness. Data were collected using a semi-structured questionnaire comprised of demographic and qualitative questions and the Team Effectiveness Tool (TET) (Saskatchewan Health, 2002). The validity and reliability of the TET was not discussed. Teams with higher ratings on the TET emphasized the importance of regular team meetings and/or regular communication as a strategy related to

helping team effectiveness. Regular meetings or communication, team development, role clarification, and defined purpose and goals were identified by the participants as facilitators of team effectiveness.

Emery et al. (2011) measured the team functioning of a virtual team that communicated primarily by email and telephone. Team function was measured every six months for 18 months, using the Team Fitness Test (Bendaly, 1996) and the Team Development Measure (Mahoney & Stock, 2010). The reliability and validity of the tools was not discussed. The team met face-to-face quarterly to review the results of the team functioning and effectiveness assessments and to address team challenges. A marginal increase in team cohesiveness resulted. Participants reported the discussion of team functioning was key to understanding and building team processes. Assessment of team functioning, discussion of the results and subsequent problem-solving to utilize the strengths of the team to overcome challenges was crucial for optimal IP team operation. The authors suggest virtual teams may be as highly or more developed than co-located teams.

Legault et al. (2012) examined the development of collaborative relationships between family physicians and the Anticipatory and Preventative Team Care (APTCare) team comprised of nurse practitioners and pharmacists. Data were collected at the beginning, midpoint, and end of the study using focus groups, interviews and the Jones and Way Collaboration Care Provider Survey (Way, Jones, Baskerville & Busing, 2001). The reliability and validity of the tool is not discussed. Geographic separation, part-time employment, and home visits were identified as barriers to IPC due to the limited opportunity for face-to-face communication. The importance of casual and informal interactions for collaboration was emphasized.

Thylefors (2012) investigated the connection between team work and time allocated to meetings and face-to-face contact within an IP team. Data were collected using a questionnaire that covered five areas: time allocation, team interdependence, role overlap, coordination and management, and team climate and communication. There was no correlation between the amount of time allocated to formal and informal contact of team members and degree of IP team collaboration. IP team collaboration was predicted by team climate, communication, manager coordination and self-regulation.

Despite the lack of evidence, practice interventions were identified by many study participants as facilitators of IPC (Chan et al., 2010; Clark & Smith, 2009; Drew et al., 2010; Emery et al., 2011; Howard et al, 2011; Legault et al., 2012; Martinussen et al., 2012; PICE, 2008; Robben et al., 2012; Suter & Deutschlander, 2011; Thylefors, 2012) and therefore are important to consider. A number of practice interventions had a positive impact on IPC.

Martinussen et al. (2012) reported simply asking HPs to work as an IP team had a positive impact on IPC. However, others suggested there was more involved than simply asking people to work together. Team development was identified as an important facilitator for IPC (Drew et al., 2010) and overall team functioning (Emery et al., 2011; Suter & Deutschlander, 2011; Thylefors, 2012). Assessment of team functioning, discussion of the results and subsequent problem-solving to utilize the strengths of the team to overcome challenges was crucial for optimal IP team operation (Emery et al.).

Communication had a profound effect on IPC with enhanced communication and information sharing frequently identified as a facilitator to IPC (Chan et al., 2010; Clark & Smith, 2009; Drew et al., 2010; Legault et al., 2012; Thylefors, 2012). Interpersonal communication among team members was important, with trust, openness, clarity, support,

active participation and constructive feedback identified as facilitators of IPC (Thylefors). The understanding and trust from effective communication directly and positively impacted IPC; strong personal relationships between team members were necessary for IPC (Chan et al.).

Direct interaction between team members was important (Legault et al., 2012; PICE, 2008). It was however unclear, whether face-to-face communication was critical to team development and ultimately to IPC. Thylefors (2012) did not find a correlation between the amount of time allocated to formal and informal contact between team members and the degree of IPC, but participants in this study already allocated 10% of their time to team meetings and team consultations. Limited casual and informal interactions were a barrier to IPC suggesting the importance of co-located teams and restricting the number of part-time employees increased contact between team members to build strong rapport (Legault et al.). Face-to-face interaction with other health care providers is a facilitator of IPC (PICE, 2008). Emery et al. (2011) concluded that virtual teams may be as highly or more developed than co-located teams, although the team studied did meet face-to-face quarterly. Assessing team function and utilizing team strengths to overcome challenges (PICE, 2008) was perhaps of greater importance than face-to-face contact (Emery, et al.).

Regular and effective team meetings were frequently identified as a facilitator of IPC (Chan et al., 2012; Drew et al., 2010; Grymonpre et al., 2008; Legault et al., 2012; Suter & Deutschlander, 2011). It was unclear whether teams should meet face-to-face or if virtual meetings were adequate. Chan et al suggested team meetings could be either face-to face or by telephone.

Interprofessional Organization Interventions

Only one of the 15 included studies looked exclusively at interprofessional organization interventions. Howard et al. (2011) set out to understand how organizational factors influenced team climate and to determine whether there were modifiable factors that predicted better team climate. A survey measuring team functioning, organizational culture, leadership, electronic medical record (EMR) use, and demographic information was developed for this study and administered to family health teams in primary care. Leadership score, group and developmental culture types, and greater use of the EMR were associated with higher team climate scores. Other organizational factors, such as number of sites and size of group, were not associated with the team climate score. The authors also found interpersonal aspects of teamwork were more important than organizational aspects, and individuals committed to collaborative practice would engage in teamwork regardless of environmental factors.

Despite the lack of evidence, participants in other included studies identified interprofessional organization interventions as barriers or facilitators to IPC (Clark & Smith, 2009; Drew et al., 2010; Howard et al., 2011; Legault et al., 2012; Suter & Deutschlander, 2011; Thylefors, 2012). Clark & Smith (2009) used an Advisory Committee comprised of key stakeholders and a seconded project lead to promote collaborative practice. The Advisory Committee provided oversight of the project, discussion of implementation issues and problem solving (Clark & Smith). The project lead introduced the practice changes and worked to encourage relationships to support local collaboration and innovation (Clark & Smith). Structured facilitation was used to promote IPC in the work by Chan et al. (2010). Site visits and phone calls were made by the facilitator and a number of resources, such as referral forms, care plan templates, patient education materials etc., were made available to the sites (Chan et al.).

The role of the facilitator was to address problems and to review progress (Chan et al.). These studies did not investigate the impact of the facilitator (Chan et al., Suter & Deutschlander, 2011) or project lead (Clark & Smith) on IPC. Given the description of their roles it would be highly likely they had an impact on team functioning.

Strong leadership was identified as a predictor of IPC by Howard et al. (2011). Researchers postulated this may be related to the contribution a strong leader can make to collaboration by unifying team differences and providing support for innovation. Team leaders also impacted team culture. Group and development cultures were associated with higher team climate scores and hierarchical culture with lower team climate scores (Howard et al.). These results underscored the importance of team culture as an aspect of team functioning as well as the impact of the leader and leadership on team culture. Thylefors (2012) identified a link between team climate and manager coordination and collaboration. It is interesting to note, that coordination of team activities by the team itself also facilitated interdependent collaboration (Thylefors) acknowledging the importance of team functioning for IPC.

A number of studies reported the impact of resources, or lack thereof on IPC (Clark & Smith, 2009; Drew et al., 2010; PICE, 2008; Suter & Deutschlander, 2011). Specifically, workload and time restraints were identified as barriers to IPC (Clark & Smith; PICE), as was lack of access to family physicians for unattached patients (Suter & Deutschlander).

Strength of the Evidence

The strength of the evidence of the post-licensure interprofessional interventions (education, practice and organization) used to improve IPC in the community setting is summarized below:

- Mixed Interprofessional Interventions (Education, Practice and/or Organization) – Insufficient Evidence

    - 1 study with strong study design and fair study quality
    - 3 studies with moderate study design and insufficient study quality
    - All studies had positive effect on IPC
- Interprofessional Education Interventions – Insufficient Evidence
    - 0 studies with strong study design
    - 4 studies with moderate study design and good (1), fair (1), insufficient (2) study quality
    - 2 studies with weak study design and insufficient study quality
    - 5 studies had positive effect on IPC, 1 study had no effect on IPC
- Interprofessional Practice Interventions – Insufficient Evidence
    - 0 studies with strong study design
    - 2 studies with moderate study design and fair (1) and insufficient (1) study quality
    - 2 studies with weak study design and fair (1) and insufficient (1) study quality
    - All had positive effect on IPC
- Interprofessional Organization Interventions – Insufficient Evidence
    - 1 study with weak study design and fair study quality
    - Had positive effect on IPC
- Interprofessional (Education, Practice and Organization combined) Interventions – Sufficient Evidence
    - 1 study with strong study design and fair study quality
    - 9 studies with moderate study design and good (1), fair (2), and insufficient (4) study quality
    - 5 studies with weak study design and fair (2) and insufficient (3) study quality
    - 14 studies had positive effect on IPC. 1 study had no effect on IPC

There was insufficient evidence to determine that using IP interventions from more than one category at the same time had a positive and significant effect on IPC. All four studies using interventions from multiple categories had a positive impact on IPC (Chan et al., 2010; Clark & Smith, 2009; Martinussen et al., 2012; & Suter & Deutschlander, 2011). There was one study with strong study design (Martinussen et al.) and fair study quality and three studies with moderate study design and insufficient study quality (Chan et al.; Clark & Smith; Suter & Deutschlander). Two more studies of strong or moderate design and good or fair study quality would be required to provide sufficient evidence (Briss et al., 2000).

There was insufficient evidence to determine a positive and significant effect on IPC for IP education interventions. Five of the six studies using IPE, showed a positive impact on IPC (Agarwal et al., 2008; Bruner et al., 2011; Forchuk & Vingilis, 2008; Robben et al., 2012) with

one study showing no impact on IPC (Grymonpre et al., 2008). There were two studies with moderate study design with good (Bruner et al.) or fair (Robben et al.) study quality. Another three studies of similar design and quality would be required to provide sufficient evidence (Briss et al., 2000).

There was insufficient evidence to determine that IP practice interventions had a significant and positive effect on IPC. All four of the studies reported a positive impact on IPC when interprofessional practice interventions were used (Emery et al., 2011; Drew et al., 2010; Legault et al., 2012; Thylefors, 2012). There were two studies with moderate study design with fair (Emery et al.) or insufficient (Legault et al.) study quality and two studies with weak study design with fair (Thylefors) or insufficient (Drew et al.) study execution. According to Briss et al. (2000) there was insufficient evidence and more studies with improved study design and study execution were required.

There was insufficient evidence to determine that IP organization interventions had a significant and positive effect on IPC. Howard et al. (2011) was the only included study to exclusively investigate organization interventions. This study was of weak study design with fair study quality providing insufficient evidence. More studies with stronger study design and higher quality would be required to show sufficient evidence (Briss et al., 2000).

There is however, sufficient evidence to show that IP interventions, without regard to classifiction, have a positive effect on IPC. Fourteen of the 15 included studies reported that the interprofessional intervention(s) used in their work had a positive impact on IPC (Agarwal et al., 2008; Bruner et al., 2011; Chan et al., 2010; Clark & Smith, 2009; Drew et al, 2010; Emery et al., 2011; Forchuk & Vingilis, 2008; Howard et al., 2011; Legault et al., 2012; Martinussen et al., 2012; PICE, 2008; Robben et al., 2012; Suter & Deutschlander, 2011; Thylefors, 2012).

Grymonepre et al. (2008) were the only researchers to report that the intervention used in their study had no effect on IPC.

Discussion

The purpose of this literature review is to identify post-licensure IP interventions to be operationalized in an effort to increase IPC in the community care setting. Unfortunately, clear answers to the research questions are not available in the literature. The current state of the evidence is such that absolute conclusions cannot be made. There is sufficient evidence to show that IP interventions (education, practice or organization) have a positive effect on IPC. There is however, insufficient evidence to promote the effectiveness of one type of intervention over another. Insufficient evidence is apparent at all three levels: strength of the study design, quality of the research, and the numbers of studies completed. The interventions for IPC, even within categories of education, practice and organization vary significantly thereby drawing conclusions across studies is difficult. Most of the articles reviewed used multiple interventions and/or those focused on IPE. Research looking at practice-based interventions was limited where most emphasized barriers and facilitators to IPC. What was most striking was the lack of research on organizational interventions for IPC; only a single study was found supporting the urgent need for further research in this area.

The review however, does offer some direction for the promotion and support of IPC in the community care setting. It is clear that interventions to support IPC practice are helpful, but it is not clear which are more effective. To further complicate the matter, a single IP intervention can impact change at various levels (e.g., individual, team, organizational) and multiple interventions are necessary for change to occur at the practice level (Cane, O'Connor & Michie, 2012).

Post-licensure interventions are varied, with a number of the IP interventions identified as facilitators of IPC impacting the same or similar aspects of IPC. For example, IPE can result in increased knowledge and abilities with IPC and team skills which in turn impacts team functioning. Team functioning can also be impacted by leadership style and various practice interventions. Considering the current state of the evidence, healthcare leaders need to implement a variety of IP interventions to achieve a positive outcome in IPC.

Interprofessional Post-licensure Education

Although, the use of IP post-licensure education interventions intuitively makes sense, there is insufficient evidence to support the same. These results are corroborated by the literature (Reeves et al., 2009c; Reeves, Perrier, Goldman, Freeth & Zwarenstein, 2013). The widespread implementation and promotion of post-licensure IPE without sufficient evidence reflects the belief that IPE will provide health care providers with the skills and knowledge required to practice in a collaborative manner (Reeves et al., 2013). Despite the lack of evidence, one cannot ignore the potential impact of IPE on IPC reported and discussed in the literature and its significance for clinical practice. As Barr (2012) states, post-licensure IPE has an immediate impact on IPC in the practice setting.

A variety of factors are responsible for the positive impact of IPE on IPC reported in the studies. The interprofessional nature of IPE itself and attending with local professionals are facilitators of IPC (Clark & Smith, 2009; Emery et al., 2011; Martinussen et al., 2012; PICE, 2008; Robben et al., 2012). For professionals to develop an appreciation for what other disciplines bring to collaborative practice it is necessary for professionals from different disciplines to learn from, with and about each other (Barr, 2012). IPE can increase understanding and knowledge of the roles and responsibilities of other health professions (Agarwal et al., 2008,

PICE, 2008; Robben et al., 2012). It is critical for team members to not only be aware of the knowledge, skills and the role of each professional, but to truly value and appreciate the contributions that each member makes to the group (Orchard et al., 2005). Professional roles and responsibilities is the focus of a competency domain in both the National Interprofessional Competency Framework (CIHC) and the Core Competencies for Interprofessional Collaborative Practice (IECEP, 2011) further emphasizing the need to include discussion and/or emphasis on the roles, responsibilities and skills of the various health professionals in IPE events.

An increase in knowledge in one's practice area was identified as an enabler of IPC by the participants in the PICE study (2008). Continuing to provide education focussed on clinical developments to professionals in isolation of one another will do nothing to promote IPC (Conway, Little, McMillan & Fitzgerald, 2012; Delva et al., 2008). A case-based approach may be effective, by bringing health care providers from different disciplines together to discuss and appreciate the challenges faced by patients and the opportunities that arise for them with improved IPC (Delva et al.). Clinical education using a case-study approach with a focus on IPC can be used as a learning tool to promote IPC.

The understanding of IPC and its benefits gained by participants at IPE events is another factor that contributes to an increase in IPC (Forchuk & Vingilis, 2008; PICE, 2008; Robben et al., 2012; Suter & Deutschlander, 2011), making it important to include this information in education sessions. IPC is more likely to occur when team members have the specific skills and competencies required for IPC (Forchuk & Vingilis, 2008; Robben et al., 2012; Suter & Deutschlander, 2011; Xyrichis & Lowton, 2008; WHO, 2010). One of the domains of the Core Competencies for Interprofessional Collaborative Practice is team and teamwork (IECEP, 2011). An emphasis here is the need for team members to have teamwork skills (IECEP). The inclusion

of team and IPC skill development as a component of IPE has the potential to further promote IPC in the practice setting.

IPE activities described in this review require a significant time commitment from participants and therefore a financial commitment from the organization. Many of the included studies evaluated multi-day IP education interventions (Clark & Smith, 2009: Forchuk & Vingilis, 2008; Martinussen et al., 2012; Suter & Deutschlander, 2011) with others using multiple shorter workshops (Agarwal et al., 2008: Chan et al., 2010; Robben et al., 2012). Studies did not evaluate the length of workshops nor the time to engage in IPE for effective practice change.

The review provides a number of considerations that will be helpful for managers and others planning IPE initiatives.

- The entire IP team needs to be included requiring creativity in scheduling and planning. Lunch and learns, breakfast meetings, evening sessions, weekend events, teleconference and telehealth options, staff reimbursement, work schedule flexibility and other options will all need to be considered. The acknowledgement of time challenges for physicians, nurses and allied health professionals attending events will be needed.
- IPE must provide a mix of clinical content and IPC practice information.
- Discussions to learn and clearly define professional roles and responsibilities.
- Awareness of required IPC skills and competencies and weaving this information throughout the event is crucial.

IPE that includes these elements will facilitate IPC in practice settings.

Team Functioning

Team functioning is also highlighted in the review as being an important component of IPC. Team functioning can be considered an education intervention as well as a practice intervention. Assessing team functioning is one way to identify team challenges and identify areas for improvement. Evaluation and assessment of team functioning and/or team performance can provide information to be used for planning and implementing strategies to improve teams (Cioffi, Wilkes, Cummings, Warne & Harrison, 2010; Emery et al., 2011; Thylefors, 2012). Johnston et al. (2010) found that the process of giving performance feedback to the team was not only welcomed but strengthened team functioning through the identification of common goals. A plethora of tools, scales, surveys and questionnaires exist that can be used for such evaluation and assessment (CIHC, 2009). The indicators used to measure team functioning should reflect the team and organizational priorities.

Team Facilitation

A facilitator or team leader is another way to promote IPC within a team (Bradley-Eilertsen et al., 2009; Chan et al., 2010; Cioffi et al., 2010; Clark & Smith, 2009; Suter & Deutschlander, 2011). Lack of leadership in managing and facilitating collaboration and team operations can be a significant barrier to IPC (CBC, 2012). A team leader, facilitator or coordinator can promote and support IPC in a number of ways: (a) ensuring all appropriate and necessary information is shared, (b) holding team members accountable for their contributions to the care plan (Bradley-Eilertsen et al.), (c) providing support and guidance to develop increased levels of trust and understanding among team members (Cioffi et al.), (d) creating an environment that supports team effectiveness through team building (Cioffi et al.), and (e)

assisting with the identification of team challenges and subsequent problem solving. Hence, team leaders play an important role in IPC.

Context

The context in which IP interventions are used must be remembered and considered. Figure 1 (p. 19) illustrates the important and significant impact of context on IPC. IPC is impacted by a multitude of individual, professional, organizational and structural factors (Reeves et al., 2010). IP interventions are only one such factor.

When system challenges occur organizational changes are often seen as solutions (Barr, 2012). Changes, such as integrated care teams, are introduced without considering the implications for the workforce. Reorganization results in changes to working relationships, boundaries, power distribution, roles, responsibilities and services (Barr). The goals and values of the organization can be in conflict with professional standards negatively impacting individuals (Reinders (2008). Solomon (2009) uses complexity science to illustrate the complex and interrelated systems that impact IPC. When making even a small change it is important to consider the impact to the entire system.

Making system and organizational changes without supporting individuals to change will not result in collaborative practice (Delva et al., 2008). Having positive experiences and exposure to collaborative practice is an important influence on choosing to practice collaboratively (Solomon, 2009). It is important to consider both professional and personal experiences, knowledge, values and beliefs of those involved. When filling vacancies on the team it is important to hire those committed to IPC. Making changes to personnel policies to recognize and support collaborative practice is one way promote IPC in organizations (WHO, 2010). Hiring those committed to IPC can be challenging within the union environment and be

difficult to hire based on the values of the applicant. Focussing the interview discussions and questions on IPC would allow for the inclusion of IPC knowledge and skills in the selection criteria. Moving the focus of staff performance reviews from only profession specific competencies to include IPC competencies would support the development of IPC competencies by individuals (Conway et al., 2011). Making such shifts in hiring practices and performance review procedures is often within the control of front-line leaders.

Some professions and professionals may resist education and service reform in an effort to protect their territory. For such reforms to be successful it is crucial that the unique contribution of each profession to practice be respected and their input sought when planning change (Barr, 2012). Rather than winning or losing, collaborative practice is about using the unique skill set of each profession to work together to find the best solutions for clients (Solomon, 2009).

Limitations

A number of limitations may have impacted the outcomes of this literature review. These limitations should be considered when interpreting the results. Strict criteria for inclusion were used but may have eliminated important information that may have helped in answering the research questions. For example, one such criterion limited inclusion to studies in the community care setting. Research focused on other IP collaborative initiatives elsewhere in the health system may have contributed to results for the review.

Only studies written in English were reviewed. Excluding articles based on language results in bias (CRD, 2009). Studies done in non-English speaking countries with statistically significant results are more likely to be translated and published in English journals than those with non-significant results with the potential for further bias in the results.

Systematic reviews are usually conducted with a team of researchers. This review was compiled by a single researcher as part of a scholarly project to complete a Masters in Nursing. Hence, the results may have been influenced by researcher bias and interpretation. To address this issue, three studies were reviewed by the supervisor of this project to validate results and the study quality ratings. The researcher did also engage in conversation with her supervisor and others around this work.

A review of websites was conducted by the author of this paper to search for studies and evaluation projects in the grey literature. Given the time restraints for this project and a single reviewer, the website review for pertinent grey literature for this project was by no means exhaustive. Therefore, additional evidence may exist to support post-licensure interventions for IPC.

It is important to remember that the lack of evidence regarding IPC and IP interventions is another limitation to this work. Many policy makers consider IPC to be the solution for many of our health system's challenges (Frenk et al., 2010; Reeves et al., 2009a) and the research documenting the positive effects of IPC on health care and patient outcomes is accumulating (Zwarenstein et al., 2009). Despite the lack of evidence governments and policy makers are making significant organizational changes and investing significant resources in the promotion of IPC making it important to consider the evidence regarding the effectiveness of IP interventions (Zwarenstein et al.)

Conclusions

The multiple IPC frameworks (D'Amour & Oandasan, 2005; WHO, 2010) and competency guidelines (CIHC, 2010; Conway et al., 2011; IPEC, 2011) published present a plethora of information regarding IPC to be considered by leaders. The sheer volume of

information can leave leaders feeling intimidated, overwhelmed, and unsure where to begin. "The gap between research evidence on IPC and practice is wide, well documented and troubling" (Tremblay et al., 2010, p.2). The purpose of this work was to identify post-licensure IP interventions that could be used to operationalize IPC in the community care setting. This systematic literature review does not clearly identify IP interventions to be used; it does however provide some direction to leaders. Since this work originated out of my practice setting, I have included a brief dissemination plan which can be found in Appendix F.

Recommendations for Practice

Due to the lack of evidence the following recommendations for practice are to be considered with caution. The available evidence and the findings of the included studies were considered when making these recommendations.

- Implement multiple interprofessional (education, practice and/or organization) interventions at the same time achieve the most promising results (Chan et al., 2010; Clark & Smith, 2009; Martinussen et al., 2012; (Suter & Deutschlander 2011).
- Provide IPE with opportunities to:
    - develop IPC knowledge and skills (Forchuk & Vingilis, 2008; PICE, 2008; Robben et al., 2012; Suter & Deutschlander),
    - develop disciplinary and interdisciplinary clinical practice knowledge and skills (PICE),
    - develop appreciation for and understanding of and respect for other health care providers' roles and responsibilities (Agarwal et al., 2008; Emery et al., 2011; Legault et al., 2012; PICE; Robben et al.),

    - learn from and interact with other HPs (Clark & Smith; Emery et al.; Martinussen et al.; PICE; Robben et al.).
- Provide a team leader or facilitator to coordinate team activities and provide training in all aspects of interprofessional team leader responsibilities and leadership processes (Chan et al.; Clark & Smith; Suter & Deutschlander).
- Assess team functioning and performance to provide targeted activities to improve team functioning (Emery et al.; Suter & Deutschlander; Thylefors, 2012).
- Provide opportunities to utilize team strengths to overcome team challenges (Emery et al.; Suter & Deutschlander; Thylefors, 2012).
- Hire staff committed to interprofessional collaborative practice (Bruner et al., 2011; Grymonpre et al., 2008; Howard et al., 2011).

Recommendations for Research

The studies evaluated in this systematic review did not provide sufficient evidence of effectiveness for post-licensure interventions. The hypotheses that IP interventions have a significant and positive impact on IPC in the community care setting seems intuitively correct but clear evidence to support the same remains elusive. Overall, more research is required on post-licensure interventions for IPC, but more study is definitely required focusing on practice and organizational interventions where there is very limited research completed to date.

- More studies of a similar nature would provide further evidence of effectiveness.
- More studies with IPC measurement included. Over 40 studies reviewed for inclusion did not use a measurement of IPC and were therefore excluded.
- More studies with before and after measurements thus improving study design and ultimately increasing the strength of the evidence. The use of a control group would

improve study design and increase the strength of the evidence. Many of the included studies used volunteer participants who were already committed to IPC therefore changes in IPC measured may have been minimal.

- Consistency in language, definitions and measurement scales would make comparison of studies easier and more relevant.

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Appendix A: Glossary of Terms

Client: Used to describe service-user in the community care setting.

Community care: The provision of in-home and clinic services to people with acute, chronic, palliative or rehabilitative health care needs. These services are provided by a variety of health professionals including; nurses, physiotherapists, occupational therapists, social workers, respiratory therapists and community health workers.

Interdisciplinary practice: 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 (Orchard et al., 2005)

Interdisciplinary team: A client-centered multidisciplinary team with the client and professionals working together to set goals. Team members readily share knowledge, trust the judgements of others and are influenced by others when making decisions (Johansson et al., 2010).

Integrated care team: A multidisciplinary team comprised of a group of community care health professionals (nurses, social workers, occupational therapists, physiotherapists, dieticians and respiratory therapists) aligned with the family physician.

Interprofessional collaboration (IPC): The process of developing and maintaining effective interprofessional working relationships with learners, practitioners, patients/clients/families and communities to enable optimal health outcomes (CIHC, 2010)

Interprofessional education (IPE): When two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes (WHO, 2010).

Interprofessional education intervention: Target the individual with the intent of increasing their knowledge and skills. This formal interactive education is provided to two or more

professions and can occur at both pre and post-licensure. A variety of activities such as simulation, seminars, courses, workshops, and clinical placements can be used (Reeves et al., 2009a).

Interprofessional practice intervention: include those activities and strategies used in health care settings to improve the interactions and/or processes between different professional groups to improve collaboration. Such practice based processes include work process, work routines and teamwork (Reeves et al.).

Interprofessional organization intervention: include organizational structures or systems that improve collaboration. Organizational interventions address organizational structures such as culture, policies, funding, space and human resources (Reeves et al.).

Interprofessional intervention: Those practices used specifically to enhance interprofessional collaboration (Suter et al., 2012).

Multidisciplinary team: Team member work within the boundaries of their own profession and expertise; progress is discussed but there is not a clear understanding of the roles and functions of other team members. Client involvement may or may not occur (Johansson et al.).

Appendix B. Search Strategies for Peer Reviewed Literature

(Limits: January 2008 – March 2013, English, peer-reviewed)

Database		Search Terms	Results
MEDLINE 1st search strategy	1.	interprofession* or inter-profession* or interdisciplin* inter-disciplin* or intraprofession* or intra-profession* or transdisciplin* trans-disciplin* or multiprofession* multi-profession* or 69ultidiscipline* or multi-disciplin*	135782
	2.	collaborat* or ”collaborat* practice*” or “interprofession* collaborat* practice” or “team work” or teamwork or team-work	93499
	3.	“primary care” or “primary healthcare” or ”community care” or “home health” or home-health or homehealth or community	502581
	4.	1 and 2 and 3 (with limits)	1030
MEDLINE 2nd search strategy	1.	(MM “Interprofessional Relations+”) OR (MM “Patient Care Team+”) OR (MM “Interdisciplinary Communication”)	39821
	2.	(MM “Cooperative Behavior”) OR (MM “Primary Health Care+”) OR (MM “Patient Care Team+”)	73677
	3.	(MM “Community Health Services+”) OR (MM “Home Care Services+”) OR (MH “Community Health Centers+”) OR (MH “Community Mental Health Services”) OR (MH “Community Mental Health Centers”) OR (MH “Community Health Nursing”) OR (MH “Home Care Agencies”)	299230
	4.	1 and 2 and 3 (with limits)	383
EMBASE	1.	interprofession* or inter-profession* or interdisciplin* inter-disciplin* or intraprofession* or intra-profession* or transdisciplin* trans-disciplin* or multiprofession* multi-profession* or 69ultidiscipline* or multi-disciplin*	71311
	2.	collaborat* or ”collaborat* practice*” or “interprofession* collaborat* practice” or “team work” or teamwork or team-work	229027
	3.	“primary care” or “primary healthcare” or ”community care” or “home health” or home-health or homehealth or community	603822
	4.	1 and 2 and 3 (with limits)	1274
CINAHL 1st search strategy	1.	interprofession* or inter-profession* or interdisciplin* inter-disciplin* or intraprofession* or intra-profession* or transdisciplin* trans-disciplin* or multiprofession* multi-profession* or 69ultidiscipline* or multi-disciplin*	52304
	2.	collaborat* or ”collaborat* practice*” or “interprofession* collaborat* practice” or “team work” or teamwork or team-work	87586
	3.	“primary care” or “primary healthcare” or ”community care” or “home health” or home-health or homehealth or community	173454
	4.	1 and 2 and 3 (with limits)	935

Database	Search Terms	Results
CINAHL 2nd search strategy	1. (MM "Interprofessional Relations+") OR (MH "Intraprofessional Relations") OR (MM "Collaboration") OR (MM "Multidisciplinary Care Team+")	20758
	2. (MM "Home Health Care+") OR (MH "Community Health Nursing+") OR (MH "Community Mental Health Services+") OR (MM "Primary Health Care")	65032
	3. 1 and 2 and 3 (with limits)	555
ABI Inform	1. interprofession* or inter-profession* or interdisciplin* inter-disciplin* or intraprofession* or intra-profession* or transdisciplin* trans-disciplin* or multiprofession* multi-profession* or 70ultidiscipline* or multi-disciplin*	81049
	2. collaborat* or "collaborat* practice*" or "interprofession* collaborat* practice" or "team work" or teamwork or team-work	312620
	3. "primary care" or "primary healthcare" or "community care" or "home health" or home-health or homehealth or community	2287929
	4. 1 and 2 and 3 (with limits)	443
Web of Science	1. interprofession* or inter-profession* or interdisciplin* inter-disciplin* or intraprofession* or intra-profession* or transdisciplin* trans-disciplin* or multiprofession* multi-profession* or 70ultidiscipline* or multi-disciplin*	7627
	2. collaborat* or "collaborat* practice*" or "interprofession* collaborat* practice" or "team work" or teamwork or team-work	270338
	3. "primary care" or "primary healthcare" or "community care" or "home health" or home-health or homehealth or community	74434
	4. 1 and 2 and 3 (with limits)	41
Total number of articles (with duplicates removed)		2747

Appendix C. Websites Screened

Universities

McMaster University, Interprofessional Education (http://fhs.mcmaster.ca/ipe/)

Memorial University of Newfoundland, Centre for Collaborative Health Professional Education (http://www.med.mun.ca/cchpe/iecpcp.asp)

Queen's University, Office of Interprofessional Education and Practice (http://meds.queensu.ca/oipep/home)

University of British Columbia, College of Health Disciplines (http://www.chd.ubc.ca/)

University of Toronto, Office of Interprofessional Education (http://www.ipe.utoronto.ca/)

University of Western Ontario, Office of Interprofessional Health Education and Research (http://www.ipe.uwo.ca/)

Interprofessional healthcare and interprofessional education

Australasian Interprofessional Practice and Education Network (AIPPEN) (http://www.aippen.net/)

Aberdeen Interprofessional Health & Social Care Education, UK (http://www.ipe.org.uk/)

Canadian Interprofessional Health Collaborative (CIHC) (http://www.cihc.ca/)

Centre for Advancement of IP Education (CAIPE) (http://www.caipe.org.uk/)

Institute for Health Care Improvement – Health Professions Education Collaborative (HPEC) (http://www.ihi.org)

Institute of Interprofessional Health Sciences Education (IIHSE) (www.iihse.ca)

Interprofessional Health Collaborative of Saskatchewan (IHCS) (http://www.usask.ca/ipe/about_ihcs/index.php)

Interprofessional Network of BC (In-BC) (http://www.in-bc.ca/)

Nordic Interprofessional Network (Nipnet) (http://www.nipnet.org/)

Western Canadian Interprofessional Health Collaborative (WCIHC) (http://www.wcihc.ca/Home.htm)

World Health Organization Study Group on IECPCP (http://www.who.int/hrh/professionals/en)

Appendix D. Data Extraction Table

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
Agarwal et al, 2008 Study quality score 1/6 Insufficient quality	To assess the impact of the McMaster Interprofessional Mentorship and Evaluation (MIME) Program on quality of work life and attitudes towards other health professionals. Goals of MIME program: -increase interprofessional interactions -learn about the roles of other health care professionals -improve work-life satisfaction.	Mixed methods Pre and post surveys using: *Attitudes Towards Health Professionals Questionnaire (AHPQ) Quality of Worklife (QWL) survey* Worksheets: recording roles and events and noting any resulting learnings or realizations were to be completed following each conversation Digital recordings of reflections Program evaluation form Focus Groups Thematic analysis of worksheets and reflections	Ontario, Canada Interprofessional Family Health Teams 64 participants: physicians, nurses, dieticians, social workers, administrative clerks, education assistants, clinic aides and lactation consultant	MIME Program. Aimed to encourage interdisciplinary pairs to converse intentionally about clinical practice-related situations/events and to consider different perspectives and roles Introductory and closing workshops Pairs of participants were encouraged to have 7 intentional conversations.	**Findings:** -AHPQ results: participants ranked professionals of their partners' discipline higher on the caring scale, indicating increased knowledge for and appreciation of that role -expanded interprofessional interactions -increased knowledge of their partner's discipline. -little change in QWL survey **Limitations:** -very short report with much research detail missing, including sample demographics, and thorough reporting of results
Bruner, Waite & Davey, 2011b Study quality score 5/6 Good quality	To examine how providers' participation in six same discipline focus group discussions, exploring interdisciplinary collaboration affected providers' views of collaboration.	Quantitative Part of a mixed methods study 5 self-report quantitative scales measuring collaboration were administered at baseline (2 weeks prior to focus	United States Nurse Managed Primary Health Care Center Urban 39 participants out of possible 57	Same discipline focus group discussions exploring experiences of interdisciplinary collaboration	**Findings:** -another article reports qualitative findings therefore only quantitative findings reported below -only 1 scale out of 5 showed significant and positive change -providers' views on collaboration ranged from positive to moderate

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
		groups) and 3 to 8 months post intervention	3 administration, 8 primary care providers, 6 dental staff providers, 7 behavioural health staff, 6 health educators, and 1 physical therapist		-most measures showed a non-significant improvement following the intervention -the least positive views of collaboration for provider groups with lower levels of education, with upper administration reporting the most positive views on collaboration **Limitations:** -mission of center is to provide transdisciplinary care therefore staff may have had strong support of interdisciplinary collaboration prior to focus group -slow return of time 2 measures, some up to 8 months -missing time 2 data -unique structure of clinic limits generalizability -self report
Chan et al, 2010 Study quality score 1/6 Insufficient quality	To assess the effectiveness of an intervention to improve teamwork among general practitioners (GP), practice staff and allied health professionals (AHP).	Qualitative Facilitators' observations after each site visit GP's reports completed at baseline and at 6 months, Allied Health professional's (AHP) surveys at 6 months	Australia Primary Care, Chronic Disease Urban Multidisciplinary teams within 26 general practices (GP's, nurses, practice staff) and external collaborations with	A 6 month intervention (Team-link Project) consisting of an educational workshop and structured facilitation using specially designed materials, backed up by informal telephone support Educational workshop included: description	**Findings:** -part of another (Harris) study -resulted in enhanced communication and information sharing which improved IPC -increased understanding and trust -improved collaboration dependant on: -personal relationships -facilitated face-to-face or telephone meetings to discuss patients **Limitations:**

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
			AHP's including dietitians, diabetic educators, exercise physiologists, podiatrists, psychologists and physiotherapists 35 GPs 39 AHPs	of intervention, discussion of principles of teamwork, and presentation of a case study using role playing Structured facilitation included: 3 formal site visits by facilitator, intervention resources (referral directory, referral forms, referral criteria, care plan template, patient education materials and billing systems), informal site visits or phone calls from facilitator to address problems and review progress	-only qualitative measures of IPC used -limited generalizability -voluntary participation
Clark & Smith, 2009 Study quality score 0/5 Insufficient quality	To describe the trial implementation of the protocol and outcomes reflecting providers' perception of collaborative practice.	Qualitative Data collected over 18 months Written survey re. perceptions of collaborative practice at baseline and 12 months post intervention	Australia Community Mental Health Agency staff, project workers, and interagency and advisory committee members. Participants: 173 1st survey, 130 2nd survey; community	Implementation of the "Protocol to Enhance Interagency Responses for children of Parents with a Mental Illness" Process included: -Advisory Committee comprised of key stake holders -Interagency Committees with seconded project leaders	**Findings:** -at 12 months 20% reported increased collaborative activity -increased communication between staff and agencies *Barriers:* -lack of effective communication channels -differing personal and departmental interpretations of confidentiality -workload and time pressures **Limitations:** -self-report of level of IPC

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
			mental health staff, community health staff, nurses, psychologists, social workers, family workers, mental health workers	-cross-agency staff training (3 one day modules) including mental health and collaborative practice education 20 training sessions with 395 attendees	-self-report of barriers
Drew, Jones & Norton, 2010 Quality of study score 2/6 Insufficient quality	Primary: To explore the level of perceived team effectiveness in Primary Care Networks (PCN) within three health regions in Alberta. Secondary: To identify strategies, including team composition, that relate to team effectiveness in the PCNs.	Mixed methods Descriptive, cross-sectional, exploratory, semi-structured questionnaire Team effectiveness tool (TET) used to measure team effectiveness	Alberta, Canada Primary care networks	Primary Care Networks	**Findings:** -teams with higher rating on TET score emphasized regular team meetings or regular communication as a strategy related to helping team effectiveness - teams with lower TET score emphasized innovative service delivery as being important. *Facilitators:* -regular meetings/communication - team development identification of innovative service delivery -role clarification -definition of purpose and goals *Barriers:* -strategies identified as not being helpful include: -acceptance/engagement -training/orientation -resources -team development -role clarification **Limitations:** -largely rural perspective

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
					-TET does not measure all team effectiveness factors in literature -PCNs at different stages of development -selection bias?
Emery et al, 2011 Study quality score 4/6 Fair quality	To measure team functioning of an interdisciplinary team.	Mixed methods Measurement of team function at 6 month intervals over 18 months *Team Fitness Test*: 25 item self-report questionnaire, measuring 5 elements of effective teamwork (shared leadership, group work skills, climate, cohesiveness and change compatibility) *Team Development Measure*: 31 items, self-report, measures team functioning (cohesiveness, communication, role clarity, goals and means clarity)	USA Primary and specialty care clinics Participants: geripsychology, geriatric social work, geriatric psychiatry, occupational therapy, physical therapy, nutrition, chaplain, primary care physician.	BRIGHTEN Program (Bridging Resources of an Interdisciplinary Geriatric Health Team via Electronic Networking) Virtual team model where communication occurs primarily via email and phone. Meet in-person quarterly to address team functioning Following Time 2 data collection, in-person meeting to discuss outcomes and individual perceptions of team effectiveness	**Findings:** -team cohesiveness increased marginally -discussion of team functioning measures were key to understand team processes and to build team processes -increased understanding of different disciplines -learning from each other and trust -results suggest that virtual teams may be as highly or more developed than co-located teams -assessment of team functioning -discussion about results of the assessment -problem-solving to utilize strengths to overcome weaknesses is crucial for optimal interdisciplinary team operation **Limitations:** -small sample size -changing team members - disciplines remained constant but some individuals changed over the course of the study
Forchuk & Vingilis, 2008	To facilitate interprofessional	Mixed methods	Ontario, Canada	Creating Interprofessional	**Findings:** -students are interested in

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
Study quality score 2/6 Insufficient quality	collaborative mental health care in both education and practice settings. Objectives: 1) to socialize healthcare faculty, health professional students and practitioners in working together with shared problem-solving and decision-making, 2) to stimulate networking and sharing of best education approaches for collaborative client-centred practice, 3) to increase the number of educators prepared to teach from an interprofessional collaborative client-centred perspective, 4) to increase the number of health professionals trained for collaborative client-centred practice before and after entry to practice, 5) to facilitate interprofessional collaborative care in both education and practice settings, and 6) to augment the work towards provincial priorities, including:	Participatory action research Evaluation tools: -focus groups -demographic questionnaires -workshop feedback forms -flip charts, and group discussion notes -Interprofessional Interest Survey -Interprofessional Perception Scale -Interprofessional Socialization and Valuing Scale -Attitudes Toward Health Care Teams Scale -Collaboration and Satisfaction about Care Decisions Survey - Interdisciplinary Team Performance Scale.	Mental Health 5 academic and 11 community partners Involved consumers, providers, students and faculty	Collaborative Teams for Comprehensive Mental Health Services (CIPHER-MH) Steering committee and three working groups (evaluation, curriculum, and practice site) Project activities: -a series of nine two-hour workshops for students, faculty, community agencies, and consumers to sensitize and build awareness, respect, professional understanding, explore leadership, conflict resolution, case coordination, and effectiveness in interprofessional practice in mental health services -the development of interprofessional practice site placements in mental health and related services -5 full-day workshops focused on	interprofessional collaboration and value collaborative learning experiences -the use of a participatory approach and the involvement of all stakeholders throughout the process were keys to the success of the project -participants reported increased awareness and understanding (beliefs) in and appreciation and valuing (attitudes) of both interprofessional collaboration and client-centred care -participants reported developing comfort and ability (behaviour) in a range of interprofessional collaboration and client-centred care skills **Limitations:** -did above findings translate into practice change

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
	mental health care reform; care of the homeless; development of Local Health Integration Networks, and Family Health Teams			interprofessional collaboration attended by 63 practitioners	
Grymonpre, van Ineveld & Boustcha, 2008 Study quality score 2/6 Insufficient quality	To develop a sustainable IECPCP opportunity in the context of community-based geriatric care.	Mixed methods 19 tools used to capture information in 6 categories (attitudes/perceptions, knowledge/skills, behaviour, organizational practices and benefit/burden to clients) Focus groups Journals Questionnaires	Manitoba, Canada Senior pre-licensure students University faculty (medicine, nursing, pharmacy, physical therapy, and occupational therapy) 3 geriatric day hospital clinical teams	Interprofessional Education for Geriatric Care (IEGC) Project IPE training -teaching and interactive learning activities -7 core competencies (communication, conflict resolution, disciplinary articulation, dynamics, goal directedness, flexibility and leadership) Pre-licensure student IPE -experiential block (15 hours) -above IPE training Clinical team IPE -preceptors for students -above IPE training Faculty IPE	**Findings:** -participation in program was valuable -80% clinical team members and students will use content in future practice ->80% students and faculty would recommend program to others -75% clinical team would recommend program to others -no statistical difference between intervention and control group participants at baseline, post program and 6 month follow up, regarding acquisition of knowledge and skills **Limitations:** -selection bias -other IPE initiatives occurring concurrently with program -spill over of IEGC content to those not directly involved

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
				Communication strategy -IEGC website -quarterly newsletter -regular team meetings -regular steering committee meetings -conference presentations -networking	
Howard et al, 2011 Quality of study score 3/6 Fair quality	To understand how organizational factors influenced team climate and to determine whether there were modifiable factors that predicted a better team climate in the family health team (FHT) setting.	Quantitative Multivariable regression analysis Cross-sectional study using mailed survey Survey #1 completed by all participants included measures of team functioning, organizational culture, leadership, EMR use and demographics. Survey #2 completed by 1 FHT manager or executive director at each site, included practice level variables.	Ontario, Canada Family health teams in primary care 21/144 FHTs with 411/628 participants 228 physicians, 258 health professionals (nurses, social workers, dietitians, or pharmacists), 167 administrative or executive staff	Family health team	**Findings:** -team climate is positively predicted by strong leadership, group or developmental culture, and use of electronic medical records with the FHT -the lack of relationships found between most organizational factors, such as governance or mix of health professionals, and team climate suggests that interpersonal aspects of teamwork override organizational aspects, and that individuals who commit to working in this environment will engage in teamwork regardless of other factors in the environment. **Limitations:** -response bias of FHTs interested in teamwork -reflects opinions of relatively new FHTs -cross-sectional nature of the study does not allow conclusion

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
					re. order of causation with respect to the factors that influence team climate
Legault et al, 2012 Study quality score 2/6 Insufficient quality	To examine the development of collaborative relationships between family physicians and Anticipatory and Preventative Team Care (APTCare) members providing care to medically complex patients who have been identified as at-risk for negative health outcomes.	Mixed methods Interviews beginning, midpoint and end of study Focus groups The Jones and Way Collaboration Care Provider Survey (Likert scale, 11 items measuring provider satisfaction with collaborative experience, and 9 items measuring experience of current collaboration) used to evaluate collaboration and develop focus group questions APTCare team members kept daily logs	Ontario, Canada Primary Health Care Rural family practice Part of Anticipatory and Preventive Team Care (APTCare) project. Participants: family physicians, nurse practitioners, nurses, and pharmacists	Clinical APT Care team (3 nurse practitioners, 1 pharmacist) working with family practices	**Findings:** -learning to collaborate -difficult process -struggled with professional roles and responsibilities included perception of physician reluctance to assign tasks to the team, -worked through by building a strong rapport, providing strong rationale for decisions -took about 6 months to understand each other's area of competency and to recognize how they could work together -direct interaction was required to learn role, scope of practice and individual strengths of team members -satisfaction with and extent of collaboration grew over time -coordinating care as a team -advanced notice of meetings to avoid scheduling conflicts -sending out care plans with targeted areas highlighted to maximize efficiency -establishing a phone messaging system -communicating as a team -geographic separation in

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
					combination with part-time staff and home visits made face-to-face communication difficult -relied on electronic "to do" system and telephone messages -time is required (about 6 months) to have a moderately functioning team where team members have good working relationships, trust and understanding of each other's roles -team only required to work together with select clients may have been barrier to team development -inability to share geographic location limited causal and informal interactions, likely prevented APTCare Team being integrated with family practice
Martinussen et al, 2012 Study quality score 4/6 Fair quality	To evaluate the effect of an intervention aimed at improving interprofessional collaboration and service quality and to examine if collaboration could predict burnout, engagement and service quality among human service professionals working with children and adolescents.	Quasi-experimental post-test study with non-equivalent groups Questionnaire Measuring: job demand, job resources, collaboration, and burnout Five items measured collaboration on a 5 point scale.	Norway Child Mental Health 151 surveys completed including: nurses, physio therapists, teachers, social workers, child protection workers, and assistants Similar demographics	Intervention group: Interprofessional teams were formed and a variety of courses were offered. Comparison group: No intervention.	**Findings:** -participation in the project increased the level of collaboration in the intervention group significantly. **Limitations:** -self reported -34% agreed to participate

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
			between comparison and intervention groups		
Partners for Interprofessional Cancer Care Education (PICE), 2008 Study quality score 1/6 Insufficient quality	To strengthen, implement and evaluate Cancer Care Nova Scotia's (CCNS) Interprofessional Core Curriculum (ICC).	Mixed methods IP facilitators (54): - attended 5-day Interprofessional Facilitator Development Program (IP-FDP) -post IP-FDP evaluation questionnaire (46/54) -pre and 1 yr post program (18/54) (Attitudes Toward Interprofessional Learning Scale, Interprofessional Facilitation Scale, Intended Changes to IP Facilitation and Follow-up to Changes Questionnaires) -community of Practice (CoP) evaluated end of training and at 6 months (Movement Toward a Community of Practice Scale) ICC Participants (776): -attended 10 interactive modules (face-to-face and tele-health) -Post-Workshop Evaluation Questionnaire (578/776) -Intended Changes to IP interactions (530/776) -3 month follow up	Nova Scotia and Prince Edward Island, Canada Community-based, primary care HPs caring for those with cancer 54 HPs (nurses, pharmacists, social workers, radiation technologists, medical oncologists, radiation oncologists, palliative care physicians, nursing students and First Nations' HP) attended IP-FDP 776 community HPs attended ICC 12 patients 13 nursing faculty	The Partners for Interprofessional Cancer education (PICE) Implemented and evaluated Cancer Care Nova Scotia's (CCNS) Interprofessional Core Curriculum (ICC) Key activities: -developing IP facilitators -modifying existing ICC -educating community health care providers about IPE and CPCP -increasing access to resources -learning about patient's perceptions of IPC -developing a community of practice -disseminating findings -enhancing nursing students' engagement in CPCP	Findings: -attendees of IP-FDP reported: -increased awareness of using IPC -gained new knowledge -improved in 11/17 IP facilitation skills - attitudes toward IPL were high before the program and remained so after -no significant change in working more collaboratively as a CoP -intended and actual changes made to facilitation practice -attendees of ICC modules reported: -increased awareness of benefits of IP CPCP -92% gained increased understanding of roles and responsibilities of other HPs -56% intended to or considered making changes to IP practice: 1) collaborate with other professions more frequently, 2) approach others more often about patient care, and 3) include more profession in care of my patients -99% of those who responded to 3 month follow up questionnaire reported making changes in their practice: 1)

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
		(69/776) (Follow-up to Changes Questionnaire) Faculty (13): -Use of ICC Module Content Questionnaire -IPP Faculty Development Workshop Evaluation Questionnaire -focus group Patients (12): -interviews			approaching others more often about patient care, 2) increase respect for other professions, and 3) actively use or seek support from others -barriers to making changes: availability of other HPs, time/workload constraints, lack of support from other professionals -enablers to making changes: more knowledge, more interaction with other HPs, greater confidence working with others -nursing faculty and students reported increased awareness of benefits of IP teams -patents mixed reports -some positive about IPC and their care -others reported lack of IP communication and lack of referrals to local resources Limitations: -unclear as to work sites of participants -respondents to follow up questionnaires likely early adopters -response rate to follow-up data collection low (22%) -self-reported data -unable to determine if patients involved were cared for by HPs participating in the IPE -unable to determine if changes

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
					were result of this work or other IPE initiatives -participants in IP-FDP supportive of IPL before participating
Robben et al, 2012 Study quality score 4/6 Fair quality	To evaluate an IPE program for primary care professionasl to establish whether the program was able to 1) improve primary care professionals' interprofessional attitudes and attitudes toward collaboration, 2) improve primary care professionals' collaboration skills, and 3) increase collaborative behavior among primary care professionals.	Mixed methods Before and after study using: 1) *Interprofessional Attitudes Questionnaire (IAQ)* measuring interprofessional attitudes, *2) Attitudes Toward Health Care Teams Scale (ATHCT)* measuring attitudes about geriatric health care teams, *and 3) Team Skills Scale (TSS)* measuring changes in team skills of geriatric healthcare professionals Semi-structured interviews with 10 participants to assess their reactions to the IPE program, changes in their attitudes toward collaboration and other professionals, and changes in collaborative behavior	Netherlands Primary care 119 primary care professionals caring for the frail elderly: 26 general practitioners 9 pharmacists 37 nursing disciplines 35 paramedical disciplines 12 social disciplines Voluntary participation, financial compensation for time and CME credits were provided All participants in IPE program were invited to participate in evaluation study, no incentives. Participants in interviews were purposefully selected, 3 GPs, 4 nurses, 1	9 hour IPE program with 3 interactive IP workshops covering topics of frailty and IPC	

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
			pharmacist, 1 PT, 1 SW		
Suter & Deutschlander, 2011 Quality of study score 0/5 Insufficient quality	To develop, implement and evaluate innovative interprofessional (IP) approaches to health care delivery in a variety of practice sites. These sites will constitute Collaborative Practice and Learning Environments (CP&LEs) that will demonstrate exemplary collaborative practice and serve as site for IP clinical student placements.	Mixed methods Baseline assessment -environmental checklist -interviews -social network survey Staff evaluations -interviews Student evaluations -interviews -student sessions -written student reflections -mentor evaluations	Alberta, Canada 2 mental health outpatient clinics Interprofessional team (social work, nursing, psychology therapists, independent living support workers, occupational therapist, outreach workers and transition coordinators)	Primary intended outcomes: -increase IP competencies of providers -develop staff competencies to act as IP mentors for students -increase capacity for IP student placements -develop structures and processes to facilitate collaborative practice Staff interventions: -developed in collaboration with staff, external facilitators and management -clinic 1 -IP mentoring strategy -addictions education -team rules developed -team vision developed -sustainability framework -3 staff education sessions	**Findings:** -increased staff awareness of team dynamics -increased awareness of team practices and opportunities for collaboration/referrals -increased team cohesion and team functioning --increased collaborative practice competencies -increased collaboration (ie. sharing of complex clients) -more effective team meetings -improved client care processes (ie. triage, discharge) -improved access to family physicians for unattached clients **Limitations:** -only preliminary evaluation results reported on

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
				-team retreats (1 full and 2 half day) -clinic 2 -IP mentoring strategy -restructuring of weekly team meetings - review of patient journey -protocol developed for co-sharing of complex clients -3 staff education sessions -sustainability framework -access to family physicians for unattached clients -team retreats (2 half and 1 full day) Student interventions: -collaborative practice education -IP clinical placement -IP practice activities	
Thylefors (2012) Study quality score 4/6 Fair quality	What is the connection between real interprofessional teamwork and time allocated to internal meetings and contact? What is the importance of team climate,	Quantitative Questionnaire data from a larger study Statistical analysis using SPSS 11	Sweden IP teams within occupational health care, psychiatry, rehabilitation and school health care 365 professionals	Interprofessional teams	**Findings:** -no correlation between time allocated to formal and informal contact between team members and degree of team interdependence (or IP team collaboration) -team interdependence (or IP team collaboration) was

Author(s) and Study Quality Rating	Study aim(s) or Research question(s)	Methodology	Setting and Participants	Intervention(s)	Findings and Limitations
	communication, coordination and role overlap with regard to team tightness or interdependence?		Including: 6 audiologists 78 nurses 40 occupational therapists 57 psychologists 28 physicians 45 physiotherapists 67 social workers 33 special education teachers 7 speech therapists 4 technicians From 62 IP healthcare teams		predicted by team climate and communication (openness, trust, clarity, support, active participation, and constructive feedback), manager coordination (democratic, active and formal),and self regulation **Limitations:** -as all team members allocated at least 10% of their time to internal meetings and consultations it is possible that there is a lower limit of time allocation that was not identified in this study -self assessments -all data collected at one point in time

Appendix E. Quality Rating of Included Studies

	Quality of Study Execution (1 point is given for each criteria met)								
Article	Type of Study Design	Sampling Procedure	Measurement Tools	Psychometric Testing	Statistical testing of results	Confounders	Response Rate	Total Score (out of 6 or 5 if psychometric testing N/A)	Direction of Effect (for key outcome)
Agarwal et al	Before and After Study Moderate	Not discussed	Attitudes Towards Health Professional Questionnaire (AHPQ), Quality of Worklife (QWL) Survey, worksheets, digitally recorded reflections, program evaluation forms, focus groups 1	None	None	Not discussed	Not discussed	1/6	Positive effect on caring ranking of other discipline
Bruner, Waite & Davey, 2011b	Before and After Study Moderate	Voluntary	5 self-report quantitative scales to measure collaboration 1	Cronbach's alphas reported for all scales 1	Paired *t*-tests ANOVA 1	Discussed 1	68% 1	5/6	Positive and significant change on Collaboration and Satisfaction about Care Decisions Scale Non-significant positive change in other scales
Chan et al, 2010	Before and After Study Moderate	Voluntary	Reports and surveys	N/A	None	Discussed 1	Not discussed	1/5	Positive effect on teamwork
Clark & Smith,	Before	Voluntary	Survey: 3 point	N/A	None	Not	< 30%	0/5	Positive effect on

Quality of Study Execution (1 point is given for each criteria met)									
Article	Type of Study Design	Sampling Procedure	Measurement Tools	Psychometric Testing	Statistical testing of results	Confounders	Response Rate	Total Score (out of 6 or 5 if psychometric testing N/A)	Direction of Effect (for key outcome)
2009	and After Study Moderate		Likert scale questions, and 2 open-ended questions			discussed			frequency of collaboration
Drew, Jones & Norton, 2010	Case Study Weak	Voluntary	Survey including demographic and qualitative questions, and Team Effectiveness Tool (TET) 1	None	Univariate and multivariate analysis Correlation coefficient *r* 1	Not discussed	71% 1	3/6	Positive and strong correlation between TET and overall team effectiveness
Emery et al, 2011	Time Series Study Moderate	Not discussed	Team Fitness Test, Team Development Measure (TDM) 1	Cronbach's alpha 1	*t*-tests 1	Discussed 1	Not discussed	4/6	Significant positive effect on team cohesiveness.
Forchuk & Vingilis, 2008	Case Study Weak	Voluntary	Focus groups, demographic questionnaires, workshop evaluations, flip chart and discussion notes, 5 quantitative tools measuring collaboration 1	None	None	Discussed 1	Not discussed	2/6	Positive effect on awareness and understanding in and appreciation and valuing of IPC
Grymonpre, van Ineveld & Boustcha, 2008	Before and After Study	Not discussed	Focus groups, journals, questionnaires, 19 quantitative tools	None	None	Discussed	Not discussed	3/6	Positive effect on awareness by health care providers of

Quality of Study Execution (1 point is given for each criteria met)									
Article	Type of Study Design	Sampling Procedure	Measurement Tools	Psychometric Testing	Statistical testing of results	Confounders	Response Rate	Total Score (out of 6 or 5 if psychometric testing N/A)	Direction of Effect (for key outcome)
	Moderate		measuring collaboration 1			1			benefits of using interprofessional teams
Howard, Brazil, Akhtar-Danesh & Agarwal, 2011	Case Study Weak	Voluntary	Survey (measures of team functioning, organizational culture, leadership, EMR use, and demographic information) 1	None	Bivariate and multivariate analysis 1	Not discussed	65.8% 1	3/6	Leadership score, group and developmental culture types, and use of more EMR capabilities had positive effect on team climate scores
Legault et al, 2012	Time Series Study Moderate	Not discussed	Interviews, focus groups, and Jones and Way Collaboration Care Provider Survey 1	None	None	Discussed 1	Not discussed	2/6	Positive effect on collaboration
Martinussen, Adolfsen, Lauritzen & Richardsen, 2012	Before and After Study Strong	Voluntary	Questionnaires with 6 quantitative scales 1	Coeffecient alphas 1	*t*-test regression analysis 1	Discussed 1	31%	4/6	Positive effect on collaboration
PICE, 2008	Case Study Weak	Voluntary	Questionnaires with quantitative component 1	None	None	Not discussed	22%	1/6	Positive effect on awareness and practice of IPC
Robben et al, 2008	Before and After	Voluntary	Interprofessional Attitudes	None	*t*-tests	Discussed	67.2%	4/6	Significant positive effect on

Quality of Study Execution (1 point is given for each criteria met)									
Article	Type of Study Design	Sampling Procedure	Measurement Tools	Psychometric Testing	Statistical testing of results	Confounders	Response Rate	Total Score (out of 6 or 5 if psychometric testing N/A)	Direction of Effect (for key outcome)
	Study Moderate		Questionnaire, Attitudes Toward Health Care Teams Scale, Team Skills Scale and interviews 1		chi square tests 1	1	1		interprofessional attitudes and team skills, no effect on attitudes toward geriatric teams
Suter & Deutschlander, 2011	Before and After Study Moderate	Voluntary	Environmental checklist, interview, social network survey	N/A	None	Not discussed	Not discussed	0/5	Positive effect on collaboration and team functioning
Thylefors, 2012	Case Study Weak	Voluntary	Questionnaire with quantitative components 1	None	*t*-test ANOVA 1	Discussed 1	77% 1	4/6	Team climate, manager coordination and self-regulation have a positive effect on team interdependence

Appendix F. Dissemination Plan

The findings of this work will be shared with my colleagues in Kelowna who are also responsible for the development of integrated care teams. I will not only share the written work with those wishing to review it, but I will also present the findings and recommendations for practice at our weekly leadership team meeting.

As the lead of the West Kelowna/ Peachland Integrated Care Team Working Group I will use my learning to guide some of the decision-making we make as we move forward with the implementation of integrated care teams aligned with physician offices. I will share the findings and recommendations for practice in writing and in a presentation.

Based on feedback from the above two groups I may or may not pursue sharing the findings more broadly. I will consider pursuing publication of this information. I may also present the information to the entire IH community care leadership team.