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Case Studies of Interprofessional Education Initiatives From Five Countries

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Abstract

Background: Although teamwork and interprofessional collaboration are critical to patient safety, nursing, medical, and allied health graduates often feel ill-prepared to confidently communicate and collaborate with other team members. While interprofessional education (IPE) has been advocated as a way of addressing this issue, there are multiple barriers to its systematic and sustained integration in undergraduate healthcare programs. Despite these challenges, examples of effective IPE initiatives have emerged.

Innovation: This article profiles seven case studies of innovative interprofessional education activities that have been successfully implemented across five countries, for a variety of learners, using different delivery modalities, and with evaluation results attesting to their success.

Conclusions: The case studies demonstrate innovative ideas that have the potential to overcome some of the barriers to IPE through the use of creative and targeted approaches. This article provides a wealth of ideas for the successful design and implementation of IPE initiatives and will be of benefit to educators wishing to expand their repertoire of teaching approaches.

Clinical Relevance: A body of research attests to the relationship between interprofessional communication, teamwork, and patient outcomes. IPE is imperative for facilitating the development of nursing graduates' communication and teamwork skills; however, innovative approaches are needed to overcome the perceived and actual impediments to its implementation.

A wide body of research attests to the relationship between interprofessional communication, teamwork, and patient outcomes (Levett-Jones, Oates & MacDonald-Wicks, 2014; Reeves, Pelone, Harrison, Goldman, & Zwarenstein, 2017). Yet, too often nursing, medical,

and allied health graduates lack the confidence and skills needed to communicate and collaborate effectively as members of interprofessional teams (Gilligan, Outram & Levett-Jones, 2014). Interprofessional education (IPE) has been proposed as the most appropriate

educational strategy for facilitating the development of these skills (Teodorczuk, Khoo, Morrissey, & Rogers, 2016). However, multiple barriers to the efficient, effective, sustained, and systematic integration of IPE in undergraduate education programs have been described (Lapkin, Levett-Jones, & Gilligan, 2012). Despite these challenges, examples of successful and innovative IPE initiatives have emerged.

The aim of this article is to profile seven case studies of creative IPE activities that have been successfully implemented across five countries. These case studies used both online and face-to-face teaching approaches and were conducted in classrooms, clinical and community settings. The IPE initiatives targeted a range of specific learning outcomes and practice issues for undergraduate and postgraduate nursing, medical, and allied health students.

Background

Healthcare professionals are required to work both autonomously and collaboratively in complex and dynamic clinical environments. Interprofessional collaboration is defined as members of the healthcare team working together to improve the quality and safety of patient care using complementary knowledge and skills, and with respect for each other's expertise (Rogers et al., 2017). An effective interprofessional team requires knowledge and understanding of each member's roles and responsibilities as well as mutual valuing of the unique contributions made by each professional group to patient care (Wilson, Palmer, Levett-Jones, Gilligan, & Outram, 2016).

When teams communicate and collaborate effectively, knowledge and information is shared, joint decision making is enabled, and team members feel more confident and empowered to assume leadership for patient care issues appropriate to their scope of expertise (World Health Organization, 2010). A recent systematic review identified that interprofessional collaboration has a significant impact on patient outcomes and use of healthcare resources (Reeves et al., 2017). However, too often deeply entrenched cultures, power differentials, and the hierarchical nature of healthcare environments can present barriers to interprofessional collaborative practice. Thus, many healthcare graduates enter clinical environments where the rhetoric of teamwork contrasts markedly with workplace realities (Rice et al., 2010).

Thistlewaite (2015) suggested that the opportunity for healthcare students to learn together prepares them to work within interprofessional teams, ultimately leading to improved patient care. IPE occurs when learners from two or more professions learn about, from, and with

each other to enable effective collaboration and improved health outcomes (Centre for the Advancement of Interprofessional Education, 2002). However, contemporary teaching and learning approaches in higher education do not always facilitate the development of healthcare students' communication, collaboration, and teamwork skills, and formal teaching and assessment in these areas are often neglected (Leonard, Graham & Bonacum, 2011). Additionally, when educational opportunities are offered, they tend to focus mainly on communication with patients, and much less attention is given to communicating with other health professionals. As a result, graduates and their employers often report that they are not well equipped to communicate and contribute effectively as team members (Gilligan et al., 2014).

The IPE agenda emerged more than 30 years ago, but its importance was recognized following multiple international patient safety reports detailing adverse patient outcomes resulting from poor interprofessional communication and collaborative practice. Consequently, these concerns led to changing policy directions with regard to IPE. For example, in Canada there is a clear policy supporting the incorporation of IPE into health professional education, with the Health Council of Canada recommending that each university health sciences program offer an IPE subject (Bandali, Niblett, Yeung, & Gamble, 2011). Similarly, the Institute of Medicine Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing at the Institute of Medicine (2011) in the United States advocated that healthcare professionals should be educated to deliver person-centered care as members of interprofessional teams. In the United Kingdom, outrage at the findings of the Bristol Royal Infirmary inquiry, which attributed a significant proportion of clinical errors to poor interprofessional teamwork (Department of Health, 2002), led to IPE becoming a mandatory inclusion in preregistration training in health and social care programs (Department of Health & Quality Assurance Agency, 2006). In Australia, the importance of IPE came to prominence in reports such as *Towards a National Primary Health Care Strategy* (Department of Health and Ageing, 2008) and *Garling's Special Commission of Inquiry into Acute Care Services in NSW Public Hospitals* (Garling, 2008). Both of these reports recommended that university education should be undertaken in a manner that supports interprofessional teamwork and collaboration. However, these recommendations have not yet translated into the implementation of systematic and sustainable IPE initiatives in all healthcare programs (Lapkin, Levett-Jones, & Gilligan, 2012). It is evident that, despite the progress that has been made, strategies to overcome the barriers to IPE and examples of having done so are still needed.

In the following section of this article, seven diverse case studies of innovative but practical IPE activities from five countries are profiled. These examples were selected following a review of relevant literature and conference papers, and because they each included nursing students and one or more other healthcare groups, demonstrated the essential elements of IPE (Centre for the Advancement of Interprofessional Education, 2002), and used innovative and creative approaches to overcome recognized barriers and challenges to IPE (Lapkin et al., 2012).

Interprofessional Education for Quality Use of Medicines (Australia)

In Australia, opportunities for healthcare students to engage in IPE are often limited by the constraints imposed by timetabling and large student cohorts. To overcome these issues, academics from the University of Newcastle designed a set of e-learning IPE modules to enable nursing, medical, and pharmacy students to learn from and about each other's roles in the medication team (www.ipeforqum.com.au). Evidence suggests that online IPE experiences can contribute to an improved understanding of professional roles and responsibilities, enhancement of students' attitudes towards each other, and improved interprofessional communication and teamwork skills (McKee, Goodridge, Remillard, & D'Eon, 2010).

The project targeted medication safety and quality use of medicines (QUM) in the IPE modules because (a) prescribing, dispensing, and administering medications are interdependent processes that require collaboration between all members of the medication team; (b) safe medication practices are a focus of the global strategy to improve patient safety (Sears, Ross-White, & Godfrey, 2012); and (c) the prevalence of adverse patient outcomes associated with medication errors remains unacceptably high, with the World Health Organization (2011) estimating that more than 50% of all medications are prescribed, dispensed, or administered inappropriately.

Each of the five IPE for QUM e-learning modules includes a video recording of a patient journey that is based on an authentic representation of an actual clinical situation. A number are reenactments or adaptations of publicly available critical incident reports or coronial inquests. They present patients, nurses, pharmacists, and doctors of different genders, ages, and ethnic backgrounds. The IPE modules have been designed for flexible use, and educators can select the most appropriate resource to align with the particular learning objectives of their subject. Although these IPE modules provide an

ideal platform for students from two or more professions to learn together, they are also effective when used for teaching single disciplines as they illustrate the roles and contributions of all members of the medication team. The modules can be used online for self-directed learning or as stimulus materials for lectures or tutorials. A facilitator guide is provided to support educators in their integration of IPE into their teaching (Levett-Jones, Gilligan, Lapkin, & Hoffman, 2012).

Findings from a quasi-experimental study attest to the effectiveness of the IPE modules. Three hundred and twenty nursing, pharmacy, and medical students were allocated to either an experimental ($n = 155$) or control group ($n = 165$). Participants in the experimental group who completed the modules demonstrated a significantly higher intention to practice in a manner that enhances collaborative practice and medication safety than those in the control group who did not have access to the modules ($p < .001$; Lapkin et al., 2015).

Learning With Other Healthcare Students in Population Practice (United States)

Many IPE initiatives focus on co-learning in the classroom; however, the School of Nursing at Oregon Health and Science University developed the Interprofessional Care Access Network (I-CAN), an authentic interprofessional clinical experience. Students were allocated to a neighborhood with vulnerable and underserved populations and a high prevalence of poverty or complex health needs. There were three neighborhoods where students served: (a) an inner-city neighborhood with many people who are homeless and live in single room occupancy (SRO) hotels; (b) a rural community, served by a large Spanish-speaking clinic; and (c) an urban neighborhood with large numbers of recent immigrants and refugees, primarily Bhutanese, Congolese, and Syrian.

Throughout the term, nursing students carried a caseload of two to four clients who required care coordination services and were referred by partner agencies within these neighborhoods. Nursing students worked side by side with medical, dental, and/or pharmacy students visiting clients in their homes or a common meeting place. Typical examples of these services included a pharmacy and nursing student working together to provide education and support to a homeless client with mental health issues who had difficulty obtaining and using prescribed medications; and nursing, dental, and medical students addressing issues associated with poor nutrition and dentition in neighborhoods where unstable housing and food scarcity were common (Wros, Mathews, Voss, & Bookman, 2015).

Students were supported by nursing faculty-in-residence (FIRs) who provided continuity for clients and the project as a whole. The FIRs also facilitated ongoing population health projects in which nursing students participated and served as resources in the neighborhoods with interprofessional teams. Findings from a qualitative study (Gordon, Lasater, Brunett, & Dieckmann, 2015) that explored the impact of the I-CAN IPE demonstrated the benefits of this learning experience from students' perspectives, for example:

I really enjoyed working amongst teams of nursing, dental, physician assistant and medical students to share ideas, learn from each other, and develop plans to best serve the needs of the clients. [pharmacy student]

Over the 10 week I-CAN program it was rewarding to see how clients were able to accomplish or make strides towards many of their healthcare goals with the help of their I-CAN team. [physician assistant student]

We had the opportunity to work with medical students to provide care to patients in the community. This collaborative education gave us practice working as a member of an interprofessional team. Our group came up with the analogy of a football team; the most effective offense is one where each teammate knows each other's role. Likewise, in order to provide best patient care, physicians, nurses, and other members of the healthcare team should have an understanding of each other's roles and responsibilities. [nursing student]

By working with students from different professional backgrounds we are able to apply our own knowledge towards a common goal and also learn from each other. [pharmacy student]

Like many IPE initiatives, the major challenge for the I-CAN project was scheduling and provision of appropriate opportunities for students to learn together in the same place at the same time (Gordon et al., 2015).

Interprofessional Education in a Ward Setting (Sweden)

Students from Lund University participated in mandatory ward-based IPE activities during the latter part of their educational programs, with learning outcomes focused on teamwork, professional collaboration, and preparation for future professional roles. Previous experience indicated that opportunities for students to learn about interprofessional collaboration and cooperation varied considerably between clinical settings. Therefore, this ward-based educational activity was specifically designed to facilitate quality IPE experiences for all students.

IPE teams consisting of nursing, medical, and physiotherapy students undertook 8-day (4 days per week) clinical placements. During this time students were encouraged to learn with, from, and about each other to develop knowledge and skills beyond their own professional role. Supervisors were on hand at all times; nursing supervisors worked day and night shifts 7 days a week, and the medical and physiotherapy supervisors worked weekdays.

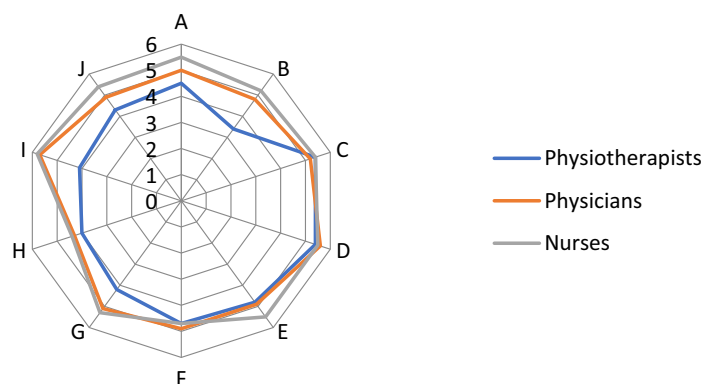
The IPE activity took place in a 14-bed hospital ward that specialized in the care of older people with conditions such as heart failure, pneumonia, and diabetes. Patients and their families were informed on admission that undergraduate students would be caring for them during their hospital stay, and their verbal consent was obtained. Each IPE team had the responsibility for providing care for three to six patients. Provision of routine personal care, for example, provided opportunities for the students to gain a deeper understanding of each other's roles, responsibilities, knowledge, and skills.

Following the IPE experience, students met with their supervisor and a lecturer from the university to reflect on issues associated with their own profession and the transition between their role as students and their professional roles. They were also required to submit a written reflection about their IPE experiences, focusing specifically on team collaboration, their role in the professional team, what they learned, and how they will make use of their IPE experiences in their future practice. The reflections were graded on both content and quality.

This IPE activity has been running, in its current form, since 2013, and the ward has hosted approximately 60 students per semester. Although patient feedback is not routinely sought, several patients specifically ask to return to the student ward on re-admission. Students evaluated the IPE experiences using a 10-item questionnaire that uses a 6-point scale. Feedback has been highly positive with regard to the three domains of teamwork, communication, and supervision, with the exception of physiotherapy students who did not always feel that the IPE experience allowed them to develop their professional competence (see **Figure 1**).

An IPE Activity to Enhance Understanding of Compassionate Care, Ethical Practice, Teamwork, and Professional Roles (United Kingdom)

At Keele University, first-year nursing, midwifery, medicine, physiotherapy, pharmacy, and biomedical science students participated in an IPE initiative designed to enhance understanding of different healthcare roles, and the importance of collaboration and teamwork.



A: I developed a new perspective on my role in the team
B: I have developed my professional competence
C: I have developed my understanding of other professional competence
D: I have developed my understanding of the importance of team communication
E: I have developed my ability to communicate as a team member
F: The overall supervision was good
G: The specific professional supervision was good
H: I felt informed after the joint introduction
I: The team simulation task was considered meaningful
J: This placement was an essential element of my education so far

Figure 1. 2015 evaluation results from the ward-based interprofessional education activity ($n = 58$).

Situating the IPE initiative in the first year aimed to address students' preconceived stereotypes about the roles of other team members (Derbyshire & Machin, 2010; Lewitt, Ehrenborg, Scheja, & Brauner, 2010). This approach also helped to develop a sense of professional identity, empathy towards other members of the team, and understanding of the importance of effective teamwork and communication (Anderson & Lennox, 2009; Baker, Egan-Lee, Martimianakis, & Reeves, 2011).

Students attended an introductory plenary session that outlined the structure, concepts, and content of the IPE activity. They then divided into smaller interprofessional groups of no more than 15 students to discuss the concepts of compassionate care, ethical practice, teamwork, and professional healthcare roles. The stimuli for this activity were cases from the Mid Staffordshire National Health Service Foundation Trust Public Enquiry into patient neglect, safety, and death (Francis, 2013). To support the discussion and to help facilitate students' understanding of relevant concepts, the six Cs (care, compassion, competence, communication, courage, and commitment); (Cummings, 2013) and ethical principles of care (Beauchamp & Childress, 2009) were provided electronically as prereading. This activity took place over two afternoons, with online discussions in between. At the end of the IPE activity, each group developed a poster depicting key issues associated with their case. The poster

was then presented by the group to other students, academic staff, and service users.

The interprofessional nature of the learning experience facilitated interesting discussions about the content and professional training requirements of the different healthcare disciplines. Students ($n = 562$) welcomed the opportunity to learn alongside healthcare students who they would not otherwise interact with during their courses. Feedback from staff was also positive; they valued the unique opportunity to work with colleagues from other schools and the sharing of ideas about learning and teaching practices.

Students expressed a marked increase in their understanding of how poor teamwork, ineffective communication, and lack of compassionate care can result in poor patient outcomes. The IPE experience also dispelled many preconceived ideas that students had previously held and resulted in an enhanced appreciation of the roles of other healthcare professionals. Biomedical science and pharmacy students shared insightful comments acknowledging that, although they would not be at the forefront of care, they nevertheless made a valuable contribution to the work of the team. They also recognized the relevance of the six Cs and ethical principles to their roles, that patient dignity and respect were integral to managing prescriptions and samples, and that effective communication was essential to prevention of errors. Following the IPE

activity, students expressed a determination to apply their learning to their future practice, particularly with regard to effective communication, teamwork, respecting other healthcare professionals, and ensuring that patients and family members remain at the center of care provision.

This IPE activity has been conducted for two consecutive years. Enabling first-year healthcare students to analyze actual cases from the Francis Report together has proven to be a powerful influence on their educational and professional development. Feedback from students who completed the activity in previous years has demonstrated how their learning from this activity has influenced their clinical placements, with patient safety and compassionate care remaining top priorities.

Building Connection Between Researchers From Different Disciplines (Australia)

When students study in silos, they can gain a limited appreciation of the diverse research agendas, approaches, and worldviews of different disciplines. However, exposure to different philosophies, ontologies, epistemologies, and methods can open up new and illuminative ways of thinking about social phenomena, global issues, and disciplinary perspectives. Learners can also gain an understanding of the critical thinking skills that tend to be emphasized and developed in different research traditions.

In this example of IPE the aim was to enhance communication, collegiality, and interdisciplinary understandings between research students. The philosophy, ontology, epistemology, and methods (POEM) activity was a creative way to facilitate conversations between students about their similarities and differences. It was used at Central Queensland University as a critical thinking activity, with nursing, education, and creative writing research students participating as part of a research training activity.

The rationale for, and background to, this activity was explained to students and they were given two examples of POEMs previously constructed by a social worker and an occupational therapist (McAllister et al., 2012). Pairs of students from the same discipline were asked to reflect on their research approach and philosophy and to develop a POEM that represented their worldviews. The POEMs were then shared with the entire group and interdisciplinary similarities and differences were discussed. The ensuing discussions were illuminative and engaging.

Students began to recognize the diversity of approaches used in different disciplines, and that research questions and designs are shaped by underpinning knowledge traditions and methods of data collection and analysis. Students said that the activity expanded their understanding

of methodologies and how different approaches emerged from a discipline's particular interest and worldview. For example, ethnography emerged from the sociology and anthropology disciplines to take a broad and unobtrusive examination of culture; but ethnography is now being utilized by many other disciplines such as nursing and creative writing students.

Students stated that this IPE activity assisted them to match their research question with an appropriate methodology. For example, one student discussed the historical inquiry approach taken to tell the story of a group of First World War nurses. She argued that historical research has its own conventions and traditions (philosophy), and requires researchers to be impartial but also curious (ontology), take a rigorous approach to discerning fact from hearsay to identify truths (epistemology), but that the retelling of history is always partial, incomplete, and dependent on the researcher's interpretation of events (methods).

Evaluation results from this IPE activity demonstrated that following the IPE POEM activity students ($n = 17$) felt they had an enhanced understanding of the research process (71%) and confidence in themselves as researchers (76%). Importantly, they also reported that a key highlight of the activity was the opportunities to communicate with and learn from students from other disciplines.

IPE Patient Safety Workshops (Singapore)

In recognition of the relationship between patient safety and effective interprofessional communication and collaboration (World Health Organization, 2010), the Yong Loo Lin School of Medicine at the National University of Singapore implemented a 1-day IPE patient safety workshop focusing on the six International Patient Safety Goals identified by the Joint Commission International (2011). These included correct patient identification; effective communication; medication safety (high-alert medications); correct patient, site, and procedure for surgery; reduced healthcare-associated infections; and reduced falls. By focusing on these issues as an interprofessional group, it was hoped that the medical, nursing, and pharmacy students would identify teamwork strategies that could influence their future professional practice.

Each workshop was facilitated by trained academic staff and practitioners from different disciplines. In order to encourage interactivity, a variety of teaching and learning strategies were employed, for example, brief lectures, videos, root-cause analyses from real case scenarios, role plays, and posters. To date 554 students have participated in the workshops. As with many IPE initiatives,

there have been challenges. Foremost among these were the logistical and scheduling issues associated with coordinating a large number of students from three different schools and the resource-intensive nature of the workshops.

Students' ($n = 527$, response rate 95%,) evaluations of the workshops have been positive, and an average of 86% of the participants found the six IPE sessions to be "good" or "very good." Suggestions for improvement included the use of teamwork games and refined in-house videos.

An IPE Activity to Achieve Integrated Care (United Kingdom)

The integration of health and social care is at the heart of health policy in England (Department of Health, 2014). It involves care that is individualized and person centered (National Voices, 2013), with effective communication and coordination between members of the interprofessional team. Importantly, integrated care aims to ensure that the level of control over the planning of care is determined by the patient or service user. When implemented effectively, integrated care helps reduce confusion, repetition, duplication, and delays (Department of Health, 2014).

Workforce preparation for integrated care requires the bridging of gaps within and between health and social care services through the promotion of positive attitudes that overcome boundaries between professions and organizations. The core competencies of integrated care include interprofessional working and an understanding of whole systems networking, person-centered care, shared decision making, and care pathways (Shaw, Rosen, & Rumbold, 2011).

Bournemouth University provides IPE focused on integrated care for all undergraduate nursing, occupational therapy, paramedic science, midwifery, and physiotherapy students. Approximately 200 students attended each IPE event, where they collaboratively examined case examples that impacted negatively on patients and their family. They then identified strategies to alleviate or prevent this type of error occurring in the future with the support of expert practitioners, and presented their emergent ideas to the wider group.

Students worked in small and large groups that formed, reformed, splintered, and enlarged on an ongoing basis. This meant that they had the opportunity to learn with students from a range of disciplines over the course of the event. This interworking and cross-disciplinary engagement enhanced patient safety by providing opportunities for students to work together towards a person-centered outcome (Ndoro, 2014).

The integration event is just one of a series of IPE activities that occur throughout the 3-year undergraduate programs at Bournemouth University. Others look at issues such as safeguarding, dementia, and learning disabilities. The reported learning outcomes for the IPE events include an increased knowledge about the subject itself, an increased capacity to work together, enhanced creativity, and a broadening understanding of each other's roles.

Discussion

A body of research speaks to the relationship between interprofessional communication, teamwork, and patient outcomes (Rogers et al., 2017). Healthcare graduates' ability to work effectively as members of interprofessional teams is therefore critical, both to patient safety and to work satisfaction (Reeves et al., 2017), and IPE has been identified as a key strategy for developing these skills (World Health Organization, 2011). However, although IPE is integral to the preparation of future health professionals, there are many pragmatic constraints that can impede implementation (Lapkin et al., 2012). This article has demonstrated that despite the acknowledged challenges, integration of IPE is not only possible, but in many environments has already been successfully achieved through shared commitment and the use of creative educational approaches.

The IPE activities profiled in this article illustrate the impact of various online and face-to-face teaching approaches, conducted in classrooms, clinical settings, and community settings, for both undergraduate and postgraduate healthcare students (including nursing, medical, pharmacy, dental, physiotherapy, occupational therapy, paramedic science, midwifery, and biomedical science students) across five countries. Key to the success of these initiatives was a shared purpose and commitment of all team members; the determination to overcome perceived barriers to IPE; the willingness to take a risk with innovative and novel IPE approaches; support from all levels of the organization; and, lastly, a scholarly approach with a clear evaluation framework. What is clear from the examples provided is that there is no one ideal IPE approach; instead, each of the initiatives purposively addressed a specific need within a specific context, taking into account available resources and learning objectives. While a number of the IPE interventions were undoubtedly resource intensive (e.g., the Interprofessional Care Access Network and the ward-based IPE activities), others required up-front funding but then became cost neutral over time (e.g., the IPE for QUM e-learning module). It is hoped that the seven examples provided will motivate educators to recreate, adapt, and implement these

innovative and practical IPE activities within their own educational context.

Conclusions

The case studies profiled in this article demonstrate that the very real barriers to IPE can be overcome when committed educators work together to develop creative and targeted approaches. This article has provided a range of ideas for the design and implementation of IPE and will be of benefit to nurse educators, as well as educators from other health disciplines, who want to expand their repertoire of teaching approaches. Ultimately, the investment in IPE has the potential to enhance graduate employability and lead to improved teamwork and safer health care.

Clinical Relevance

A body of research attests to the relationship between interprofessional communication, teamwork, and patient outcomes. Interprofessional education is imperative for facilitating the development of nursing graduates' communication and teamwork skills; however, innovative approaches are needed to overcome the perceived and actual impediments to its implementation.

Clinical Resource

- Interprofessional Education for Quality Use of Medicines: <http://www.ipeforqum.com.au/modules/>

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