

Interprofessional Education in a Pharmacy Context: Global Report

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FIP Education Initiative

Preparing the pharmacy workforce of the future:
better science, better practice, better health care.

Colophon

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Foreword

Human resources for health are at a critical low. The World Health Organization estimates that the current shortage of health workers is in excess of 7.2 million worldwide and that, by 2035, the shortage will reach 12.9 million. Pharmacists, in particular, are lacking in the workforce in many countries. In addition, education and training needs to be strengthened globally. Pharmacy needs a global vision that encompasses the sharing of experiences, gathering of evidence and collaborative guidance to facilitate country-level initiatives.

FIPed is the name given to the component group of the International Pharmaceutical Federation (FIP) that is bringing together all of the federation's efforts in transforming and strengthening professional pharmacy and pharmaceutical sciences education globally. It is organised as a cross-cutting initiative that includes both of the boards of FIP as well as its governance bodies. More than 100 practitioner and scientific educators and over 130 deans of schools of pharmacy from throughout the world are involved in congress programming on educational issues.

The *FIPed* team prepares technical and policy papers on key areas of education, contributes to an online international journal on pharmacy education, gathers leaders in education to establish a future agenda for transformation of pharmaceutical education, and links educational policy issues to national needs for workforce development, capacity building and quality assurance.

All of these initiatives are closely tied to enhancing appropriate medicines use in global health systems, with a strong emphasis on competency development across the continuum of the pharmaceutical workforce for practice and science.

Education and workforce development are the foundations for advancement in both pharmacy practice and the pharmaceutical sciences, and the strengthening of educational programmes in the global community of universities and training centres are integral parts of FIP's Vision for 2020. This report additionally links to two other FIP reports published in 2015: 'Global Pharmacy Workforce Intelligence: Trends Report' and 'Advanced Practice and Specialisation in Pharmacy: Global Report'. FIP stakeholders have identified all these topics as being globally important and valuable for professional leadership bodies worldwide. Expansion of pharmacists' roles and scopes of practice to assure safe, effective and efficient medication use is strongly reliant on educational programmes that are socially accountable and meet international standards for quality. In that vein, *FIPed* has partnered with the World Health Organization, the United Nations Agency for Education and Social Development (UNESCO) as well as several leading universities and national organisations.

We believe that one solution to the global healthcare workforce shortage is through optimisation of the total health workforce. Interprofessional education (IPE) — at all stages of career development — is a crucial foundation to facilitate this. *FIPed's* global report on IPE is the first publication of its kind to provide a baseline on the growing global trend to recognise IPE and learning as an essential component of pharmacy education and training — importantly aligning this with WHO policy and regulatory standards. We share this knowledge from our members to our members and beyond, to trigger dialogue and action towards stronger policies. We hope that this will stimulate collaborations between all stakeholders, including professional organisations and universities embracing the important role of advocating transformation of professional development education at the national level.

This report, and others like them, are only possible due to the commitment and expertise provided by the principal authors and the personnel who have contributed to case studies and the provision of evidence and data. This report represents a significant commitment of time and effort, and on behalf of the *FIPed*, I am sincerely grateful to the individuals, organisations and institutions who have made these significant contributions. Without their contribution and commitment, these influential and data-rich publications would not be possible.



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PART 1

EXECUTIVE SUMMARY

Many global organisations — for example the World Health Organization (WHO) and the World Health Professions Alliance (WHPA) — in addition to national bodies, have endorsed statements promoting the importance of collaborative practice in healthcare provision. When medicines are part of a prevention or treatment plan, a pharmacist is essential to providing the best quality of patient care with a special focus on ensuring responsible use of medicines; hence collaborative practice should be seen as critical to developing pharmaceutical roles in healthcare systems.

Both WHO and FIP have agreed that interprofessional education (IPE) is a foundation that leads to a collaborative, practice-ready workforce, and collaborative practice leads to a strengthened healthcare system, resulting in improved patient health outcomes. IPE is, therefore, a key strategy for initial and continuing professional education and training. IPE efforts should, ideally, involve both future and present healthcare workers, and should begin before registration or licensing and persist through the course of the career via continuing professional development (CPD).

Although healthcare professionals and researchers are becoming more focused on IPE and its potential impact, there is still a lack of strong evidence supporting a positive impact on health processes and patient outcomes.

The WHO, in collaboration with partners and countries, is in the process of rolling out guidelines for IPE through a series of methods, including social media and a web portal on transformative education featuring global case studies as well as activities by subject matter experts (<http://whoeducationguidelines.org/>). At country level, activities continue as part of priority setting of education and training activities in human resources for health among all health professionals.

Professional leadership bodies, accreditation agencies and regulators see incorporating IPE as a key policy thread in their strategic policy; formation and collaboration between these agencies is becoming more common.

This FIP Education report presents a collection of case studies and examples that reflect innovation and creativity centred on IPE. These case studies highlight diverse approaches and show that IPE is becoming a more mainstream education activity for students, trainees, and practitioners worldwide. Still, *FIPed* acknowledges the limited evidence and evaluation regarding the long-term impact of IPE initiatives. This suggests that it is needed to continue to follow projects such as those highlighted here and also encourage stronger interprofessional dialogue about monitoring and evaluation methods.



PART 2

INTERPROFESSIONAL EDUCATION AND COLLABORATIVE PRACTICE

Interprofessional education is the journey; the destination is better healthcare.

A look at interprofessional education

The World Health Organization (WHO) has defined interprofessional education (IPE) as the occurrence of two or more health or social professions learning interactively about, from and with each other, all with the common goal of enabling effective collaboration and improving patient health outcomes.¹ This suggests that IPE is much more purposeful than one of the most common misrepresentations, which is students from more than one health profession sitting together in the same classroom, learning the same topics, or communicating passively in the hallway of a healthcare facility. There is much confusion about what constitutes IPE and the terminology has changed and expanded over time. Box 1 includes definitions to guide the education and practice communities in further discussions.

Box 1: Key definitions in interprofessional education.

Education terms

- **Interprofessional education** When members of two or more health and/or social care professions (e.g. dentistry, medicine, nursing, pharmacy) engage in learning with, from and about each other to improve collaboration and the delivery of care.
- **Multiprofessional education or multidisciplinary education** When members of two or more professions learn alongside one another; in other words, parallel rather than interactive learning.
- **Interdisciplinary education** When members of different disciplines (e.g. chemistry, bio-engineering, geography, social science) engage in collaborative interactive learning for a range of purposes (e.g. to understand complex interdisciplinary issues, to explore different disciplinary roles and contributions).

Practice terms

- **Interprofessional collaborative practice** When healthcare workers from different professional backgrounds work together with patients, families, carers and communities to deliver the highest quality of care.
- **Interprofessional teamwork** When different health and/or social professionals who share a team identity work closely together in an integrated and interdependent manner to solve problems and deliver services.
- **Collaborative pharmacy practice** The advanced clinical practice where pharmacists collaborate with other healthcare professionals in order to care for patients, carers and the public.

Adapted from:

Reeves S, Lewin S, Espin S, Zwarenstein M. *Interprofessional Teamwork for Health and Social Care*. London: Blackwell-Wiley; 2010.

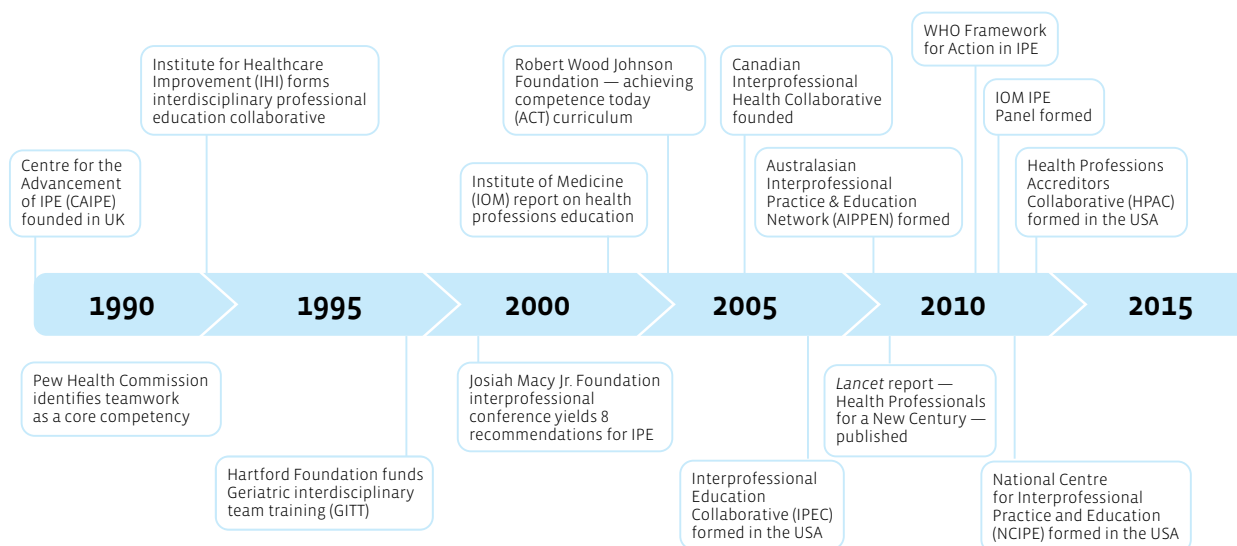
Barr H, Koppel I, Reeves S, Hammick M, Freeth D. *Effective Interprofessional Education: Assumption, Argument and Evidence*. London: Blackwell; 2005.

World Health Organization. *Framework for Action on Interprofessional Education & Collaborative Practice*. Geneva: World Health Organization; 2010. Available from: http://whqlibdoc.who.int/hq/2010/WHO_HRH_HPN_10.3_eng.pdf.

International Pharmaceutical Federation. *FIP Reference Paper Collaborative Practice*. The Hague: International Pharmaceutical Federation; 2009. Available from: <http://bit.ly/1LhHZ7e>.

IPE is not a new concept, but the initiation and history of the movement have not been well documented. Since the late 1960s, there has been interest in team-based approaches in the fields of primary care, community-based care, palliative care and others. Continued dialogue across several nations, including Canada, the UK, and the USA, led to a convergence in the late 1980s, with many national IPE movements beginning in the 1990s.^{2,3} Figure 1 summarises some of the key IPE initiatives in the English-speaking world.

Figure 1: Timeline for key IPE initiatives.



IPE has not only changed the way we think about educating healthcare professionals, but has also allowed us to reconsider the current means of healthcare delivery.³ IPE is applicable to healthcare professional students in the classroom as well as in clinical placements and these efforts should ideally involve both present and future healthcare workers.³ Interprofessional initiatives should begin before graduation or registration and should persist through the course of the career via continuing professional development (CPD). Further, although much of the published work is from a western perspective, there is much to be learnt from countries where significant specialisation of the health professions has not yet occurred.⁴

A look at collaborative practice

The WHO states that collaborative practice in healthcare occurs when healthcare professionals from different specialties provide comprehensive services by working with patients, their families, carers and communities to deliver the highest quality of care across all settings.³ Along with the WHO, the World Health Professions Alliance (WHPA), which brings together the International Council of Nurses, the International Pharmaceutical Federation, the World Confederation for Physical Therapy, the World Dental Federation and the World Medical Association, has endorsed a statement promoting the importance of collaborative practice and recently established an award for interprofessional collaborative practice.⁵

When medicines are part of a prevention or treatment plan, a pharmacist is essential to providing the best quality of patient care.⁶ Pharmacists collaborate with other professionals in a number of practice settings and, to varying degrees, greatly drive the healthcare environment and training in their country.⁶ Advanced collaborative pharmacy practice is attainable by pharmacists who have demonstrated the competence and education needed to play a direct role in patient care. An appropriately trained pharmacist must be fully integrated into the interprofessional team to optimise collaborative practice.

Efforts are seen throughout the world toward developing the collaborative model as a standard of practice. Although there are examples in many countries, the most progressive practices have been in Australia, part of Europe and North America. In North America, both Canada and the USA have national initiatives³ promoting interprofessional collaborative practice and also describing the role of the pharmacist.⁷⁻¹¹ In particular, the US Surgeon General report entitled “*Improving patient and health system outcomes through advanced pharmacy practice*”⁷ specifically highlights the benefits of pharmacists as an integrated part of the healthcare team. Australia developed a National Competency Standards Framework for Pharmacists in 2010 incorporating interprofessional collaboration.¹²

Among recent European movements, the Royal Pharmaceutical Society in Great Britain published a vision for pharmacy practice, also emphasising the importance of integration of healthcare professionals.¹³

The General Pharmaceutical Council of Spain recently released a report, “*Collaboration between healthcare professionals, key to the healthcare of tomorrow*”, as part of its mission and vision of pharmacy practice in the 21st century. The study participants consisted of community pharmacists, primary care doctors, nurses, and hospital pharmacists. Based on the success factors detected by the participant groups, four main work streams for collaborative practice were proposed: (1) promote collaborative projects to show the value of interdisciplinary cooperation, (2) develop safe and responsive information systems that allow healthcare professionals to record and share patient health information, (3) standardise the development of collaborative practice through procedures and protocols, and (4) promote joint training of healthcare professionals. This report was made in order to advance the implementation of collaborative practice among healthcare professionals.¹⁴

Regulatory hurdles for collaborative practice are being addressed both nationally and internationally. In 2010, the Australian Health Practitioner Regulation Agency was created to oversee the regulation of all health professionals in Australia, and the UK developed a single competency framework for all healthcare providers. Globally, the World Health Professions Alliance has identified broad differences among systems of regulation within various health professions and addressed the importance for changes to have future harmonisation.

A growing number of interprofessional conferences and organisations, both national and international, have been created for advancing this mission of collaborative practice. [Annex I](#) lists these.

Interprofessional education as a foundation for collaborative practice

Both the WHO and FIP have agreed that IPE leads to a collaborative practice-ready workforce, and collaborative practice leads to a strengthened healthcare system, resulting in improved patient health outcomes.¹⁶ Therefore, a collaborative practice-ready workforce cannot exist without first establishing effective interprofessional education. All healthcare professionals share a common goal of providing the best possible care to their patients.

By joining the skills of each individual professional and working as a collective unit, this common goal can be met with higher patient satisfaction, increased efficiency and decreased cost.

Current healthcare workers are consistently tasked with providing health services to increasingly complex health issues.¹

The greater complexity of healthcare and diseases, along with growing sophistication of health technology and medication therapies, and the climbing rate of healthcare professional shortages support the need for collaborative practice¹⁵ and thus IPE to improve patient outcomes and healthcare delivery.

Healthcare professionals efficiently and effectively working together will transform the fragmented healthcare system into a strengthened, uniform and collaborative system.^{1,16}

Gaps between interprofessional education, collaborative practice and health outcomes

Although the tenets of IPE are often supported in concept, actual evidence of its effect on health outcomes is still emerging. Little more than a decade ago, a Cochrane review found no well-designed studies showing the impact of IPE on patient outcomes or the healthcare process in the published literature. In 2008, six relevant studies were found, and in 2012, nine more were added.¹⁵ The increasing number of studies found between each update shows the progression and growing importance of IPE throughout this timeframe.

A summary of findings from the Cochrane review included seven outcomes: patient outcomes, adherence rates, patient satisfaction, clinical process outcomes, collaborative behaviour, error rates, and practitioner competencies.

Six studies showed that “*the care provided by use of interprofessional education may lead to improved outcomes for patients*.” Three studies showed that “*the use of interprofessional education may lead to changes in the use of guidelines or standards (e.g. adherence to clinical guidelines) among different professions*”. Two studies showed that “*patients may be more satisfied with care provided by professionals who have participated in an interprofessional education intervention*”. Clinical process outcomes were included in one study, which showed that “*changes in clinical processes (e.g. shared decisions on surgical incisions) may be linked to the use of interprofessional education*”. Studies using collaborative behaviours, error rates, and practitioner competencies as outcomes were unable to be linked conclusively to IPE.¹⁵

Seven out of 15 studies included in the Cochrane review reported positive outcomes for healthcare processes or patient outcomes, or both. The positive outcomes were reported as: “*improvements in diabetes clinical outcomes and healthcare quality improvement goals; improvements in patient-centred communication; improved clinical outcomes for people with diabetes; collaborative team behaviour and reduction of clinical error rates; increased rates of diabetes testing and improved patient outcomes; improved mental health practitioner competencies related to the delivery of patient care; and improved team behaviours and information sharing the operating room teams*”.¹⁷⁻²³

Three gaps were addressed that need to be filled in future IPE research in order to improve the quality of evidence relating to IPE and patient outcomes or healthcare process outcomes:¹⁵

1. Studies that assess effectiveness of IPE interventions, compared with separate, profession-specific interventions;
2. Randomised controlled trials (RCT), controlled before and after studies, or interrupted time series studies with qualitative strands examining processes related to IPE and practice changes;
3. Cost-benefit analysis.

The Cochrane review provides insight on the current status of IPE and research focused on IPE. Although healthcare professionals and researchers are becoming more focused on IPE and its potential impact, there is still a lack of strong evidence supporting a positive impact on health processes and patient outcomes. Globally, the World Health Professions Alliance has identified broad difference among systems of regulation within various health professions and addressed the importance for changes to have future harmonisation.²⁴

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PART 3

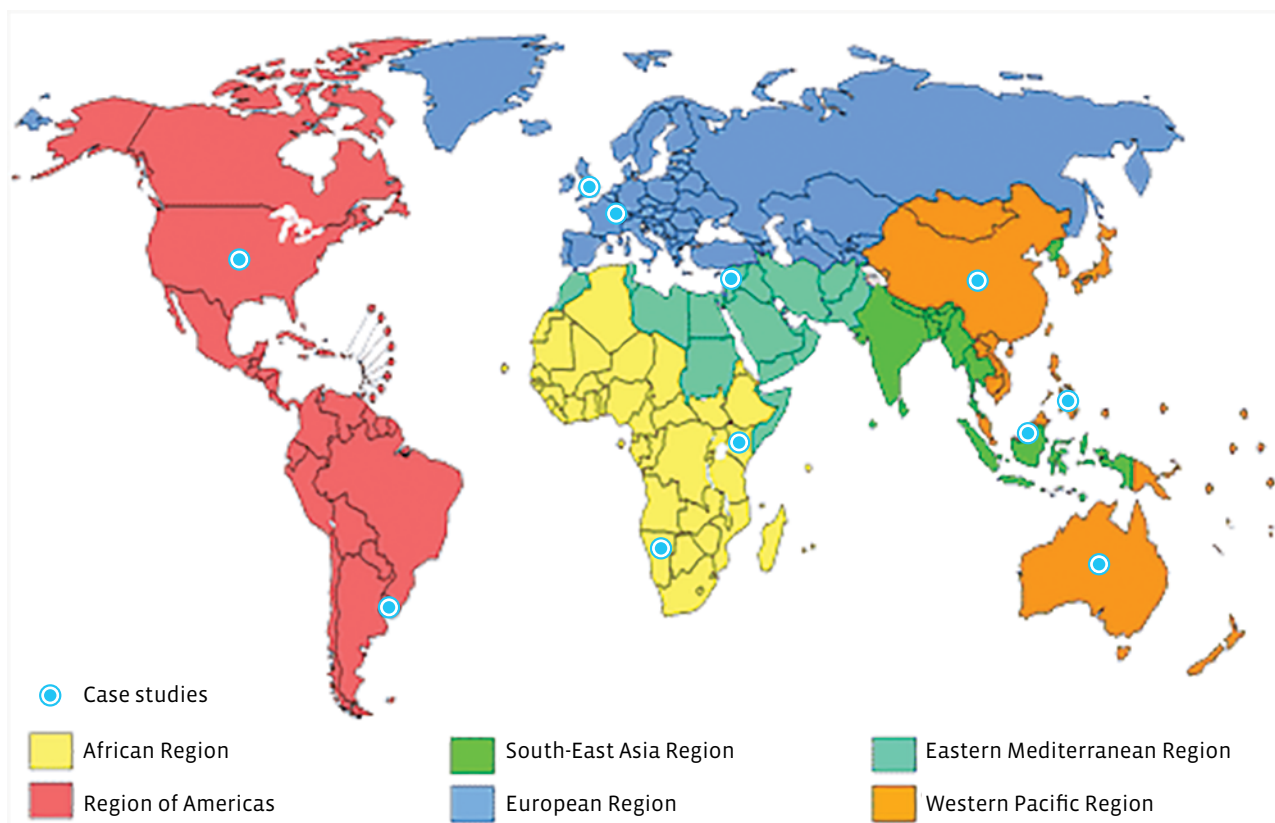
EXAMPLES FROM THE FIELD

Individually, we are a drop. Together, we are an ocean.
Ryunosuke Satoro

Interprofessional education (IPE) and collaborative practice efforts are influenced by both push factors (i.e. those forces which serve to drive away from current practice) and pull factors (i.e. those forces which serve to drive toward new models of practice). In the following section, there is an outline of selected examples of interprofessional work representing push and pull influences from a variety of perspectives (e.g. international agencies, professional bodies, accrediting bodies, student organisations, and individual institutions).

FIPeD has attempted to illustrate diversity across the collaborations, to provide examples from different professions and cadres, geographic regions and educational methods, with the goal of providing examples for a wide readership (see Figure 1).

Figure 1: Map of the WHO regions with the cases studies.



A. Global initiative

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The need to transform health professional education for the 21st century is both an approach and a process that has become urgent. It brings together the need for changes in multiple areas, among them pedagogy (e.g. IPE), competency-based training (e.g. socially accountable curricula) and a more holistic approach to health workforce education (e.g. inclusion of social determinants). It also means identifying out of all the possible changes that can take place in education and training to improve population health outcomes and what of these are the most important to bring about that change in outcome.

Several documents published over the past decade have referred to:

- the shortage of professional health workers;
- their limited skills, competencies, clinical experience, and expectations; and
- their mismatch to health needs of much of the population they serve.

The transformative scaling up of health professionals' education and training is an attempt toward sustainable expansion and reform of health professionals' education and training to increase the **quantity, quality and relevance** of health professionals, and in so doing to strengthen the country health systems and improve population health outcomes. The expansion of health professional schools may serve to increase the quantity of professional health workers working individually, but this expansion alone will not meet the equally important objectives of improving the quality and relevance of the health workforce, or meeting labour market needs and absorption capacity.

The efforts of national education and health ministries will only be effective alongside engagement of educational institutions, private sector providers, ministries of finance, professional associations and regulatory bodies, civil society organisations, and communities. And in many cases, to best meet the societal needs, these conversations should cross the historic boundaries of individual health professions.

This initiative on transforming health professional education is a major contribution to the challenging task of reshaping the health workforce of countries for the benefit of their populations.

Although the initial objective is to provide health policymakers and other important stakeholders with guidelines to help them achieve this transformation, the ultimate objective is to ensure equitable access to health services through policies aimed at developing a workforce with the right skills-mix that is deployed rationally among levels of care. This endpoint certainly has implications for interprofessionalism.

If we are to work towards the achievement of universal health coverage, education of the health workforce is crucial. In November 2013, the WHO published its guidelines entitled "*Transforming and Scaling Up Health Professional Education and Training*". However, the World Health Assembly Resolution of May 2013 (WHA 66.23) already referred to the health workforce more broadly, namely "*transforming health workforce education in support of universal health coverage*". The health workforce is defined here as:

(...) all persons, skilled and unskilled, engaged in actions whose primary intent is to enhance the health status of the population. This includes persons who directly provide health care (prevention, curative and rehabilitative care, ancillary services, medical goods provision and public health) as well as administration and support workers who — as a kind of invisible backbone — help the health system function (...)

Hernandez et al., 2006

One significant milestone toward this has been the development of a global evaluation tool (GET). This tool was produced as a result of the 2013 Resolution at the World Health Assembly, entitled "*Transforming health workforce education in support of universal health coverage*". This means going beyond the traditional cadres to include midlevel providers and community-based workers — who are part of the formal health system.

The purpose of the tool is two-fold:

- to evaluate the current situation of health workforce education in each country; and
- to provide a roadmap for transforming the education process so that the goal of universal health coverage can be achieved.

This approach is intended to develop and sustain a culture that will support universal health coverage and will be a practical tool for planning, communication between stakeholders and advocacy for change.

The WHO, in collaboration with partners and countries, is also in the process of rolling out the guidelines through a series of different methods, including social media and a specially designed web portal on transformative education (<http://whoeducationguidelines.org/>), which hosts among other features global case studies as well as featuring activities by subject matter experts. At country level, activities continue as part of priority setting of education and training activities in human resources for health among health professionals in particular.



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B. Regional, national and institutional-level examples and initiatives

This section shows the variety of models being used for IPE within the context of professional pharmacy education. Examples were collected from the responses to an open call for contributions directed at FIP members, member organisations, and contacts, these are summarised in Table 1. Evidence, references and contacts for further information can be found within the main text.

Table 1: Key messages of the case studies.

Collaboration among professional bodies | Americas

Healthcare professions involved: dentistry, nursing, medicine, osteopathic medicine, pharmacy, and public health.

The project aims to foster a common vision for team-based care; promote efforts to reform healthcare delivery and financing commitment with that vision; contribute to development of leaders and resources for substantive interprofessional learning.

The six accrediting agencies include IPE in their standards. Further, like the professional bodies, the professional accrediting agencies have now begun discussions regarding collaboration.

Collaboration within accreditation agencies: Health Professions Accreditors Collaborative (HPAC) | Americas

Healthcare professions involved: dentistry, nursing, medicine, osteopathic medicine, pharmacy, and public health.

HPAC members agreed that the definition of IPE and competency domains for health profession students identified in the Interprofessional Education Collaborative (IPEC) report are fundamental to educational programmes in the health professions accredited by the HPAC members.

Collaboration among student organisations | Europe

Healthcare professions involved: dentistry, medicine, nursing, and pharmacy.

In December 2014, the heads of the European healthcare students associations held their first joint summit. The purpose of the meeting was to focus on the importance of collaboration of all health providers for patient safety and continuity of care.

Student members identified it as an opportunity for improvement and committed to attend events sponsored by each individual organisation, to organise joint events, and to endorse shared policy and advocacy statements (e.g. joint position on antimicrobial resistance).

Australia | Western Pacific

Healthcare professions involved: medicine, nursing, occupational therapy, pharmacy, and physiotherapy.

An interprofessional curriculum was developed and implemented with students from medicine, nursing, pharmacy, physiotherapy and occupational therapy participating.

The approach taken was an effective step in advancing interprofessionalism among students. It was hoped that the skills and understanding that the students developed in the curriculum would be adapted into their future practice when they were working in teams as qualified practitioners.

China | Western Pacific

Healthcare professions involved: medicine, nursing and pharmacy.

This case study describes clinical activities in the areas of anticoagulation and antimicrobial stewardship that represent growing collaborations between physicians, nurses and pharmacists in China.

Kenya | African

Healthcare professions involved: community health workers, medicine, nursing, and pharmacy.

In the model, peer educators are responsible for providing care at various points during the patient's hospital stay and beyond. In order to identify patients and increase HIV awareness, peer educators follow up test results for each patient and provide pre- and post-HIV test counselling on inpatient wards.

The HIV peer educator model at Moi Teaching and Referral Hospital has largely been successful and may be scalable to other hospitals and clinics in western Kenya.

Lebanon | Eastern Mediterranean

Healthcare professions involved: medicine, nursing, nutrition, pharmacy, and social workers.

The project aimed to develop an IPE programme that would prepare LAU health profession graduates for practice and leadership in the interprofessional healthcare environment.

The findings suggest that the continuation of comprehensive and mandatory IPE throughout the curriculum promotes positive changes in attitudes among participating students. Future plans include linking IPE steps to courses of the curricula of all professions.

Malaysia | Western Pacific

Healthcare professions involved: Allied health, audiology and speech therapy, dentistry, medical imaging, medicine, nursing, and pharmacy.

A co-curricular module aimed at introducing the concept of IPE and collaborative practice to first-year students in allied health, audiology and speech therapy, dentistry, medical imaging, medicine, nursing, and pharmacy.

The project was successful, but it was not sustainable. IPE and practice has gained more popularity in the education and healthcare institutes in Malaysia in the past five years.

Malaysia | Western Pacific

Healthcare professions involved: medicine and pharmacy.

Using a "jigsaw learning" technique, prescribing skills workshops are conducted as interprofessional learning between medical and pharmacy undergraduate students. These workshops are part of the pharmacy curriculum. Thus far, six cohorts of medical and pharmacy students have attended these workshops.

The interprofessional prescribing skills workshops have received positive feedback from the students as well as from facilitators. The workshops can be seen as a starting point to ignite and inspire a stronger sense of collaborative learning in an ultra-competitive Asian educational culture.

Namibia | Africa

Healthcare professions involved: medicine and pharmacy

Fourth professional year pharmacy students and third professional year medical students completed a tuberculosis clinical rotation together. Each morning, medical and pharmacy students would pair up to evaluate patients at the TB hospital identifying health-related needs and drug-related problems. Both medical and pharmacy students were evaluated and responsive to the interprofessional teaching and suggested improvements. The medicine and pharmacy schools have only recently graduated their first cohorts. Further evaluation of the impact of these experiences on future practice is ongoing.

Philippines | Western Pacific

Healthcare professions involved: medicine, nursing, pharmacy, and social work.

The IPE activity is comprised of six whole-day sessions. The activities were held in the community, off campus. Each whole-day session was composed of lectures on concepts related to healthcare, small group activities for interprofessional team building, home visit or personal encounter with the patient and family and case management discussions.

Participants learnt new approaches to patient management and appreciated their roles as healthcare providers with a collaborative practice perspective.

United Kingdom | European

Healthcare professions involved: pharmacy and physiotherapy.

An interprofessional learning (IPL) mini-conference was developed during a comprehensive redesign of the undergraduate pharmacy curriculum, using an integrated approach to be more patient-focused. Student feedback on the session has been extremely positive and encouraging. More than 60% of students thought the IPL conference provided valuable experience for future practice and 70% left with a greater understanding of the other profession and their contribution to patient care.

Uruguay | Americas

Healthcare professions involved: nursing and pharmacy.

The Pharmacy Service of the British Hospital has a certified unit for compounding cytotoxic medicines with pharmacists, pharmacy technicians and nurses responsible for cytotoxic medicines. Nurses undergo training via the pharmacy department as part of the hospital's continuous education programme for oncology nurses. The training seems to change participants' points of view on cytotoxic drugs administration, improve communication among health professionals and patients, and enhance the interprofessional collaboration between pharmacists and nurses.

Collaboration among professional bodies

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The Interprofessional Education Collaborative (IPEC) was founded in 2009 by the following professional academic bodies:

- American Association of Colleges of Nursing (AACN)
- American Association of Osteopathic Medicine (AAOM)
- American Association of Colleges of Pharmacy (AACCP)
- American Dental Education Association (ADEA)
- Association of American Medical Colleges (AAMC)
- Association of Schools and Programs in Public Health (ASPPH)

All six of the founding IPEC organisations embrace the aim of the 2003 Institute of Medicine report “Bridge to Quality”,¹ which states: “all health professions graduates should be prepared to deliver care that is evidence-based as part of patient-centred teams whose work is supported by informatics and quality improvement”. Even with this in common, however, most member organisations were finding the implementation of meaningful IPE to be challenging as a single entity.

IPEC has its roots in two historical relationships: (1) the Federation of Associations of the Schools of the Health Professions (FASHP) and (2) the Association of Academic Health Centers (AAHC). The former was an informal network of associations that dated back over 40 years and was convened initially to coordinate federal policy activities among the associations. The latter included the Group on Multiprofessional Education (GOMPE), which held an annual day-long faculty development workshop. After a change in leadership, the AAHC discontinued the GOMPE meeting and it became clear that a new national platform for dialogue about IPE should be identified. From this need, the IPEC was conceived.

At the first informal meeting of the six organisations (in which all representatives were either the executive vice presidents or presidents of their respective organisations) there was discussion of previous attempts to move the IPE agenda from single profession vantage points and an agreement that the time was right to join forces.

It was discussed what a scope of our efforts might entail and identified three overarching aims:

- To foster a common vision for team-based care;
- To promote efforts to reform health care delivery and financing concordant with that vision; and
- To contribute to development of leaders and resources for substantive interprofessional learning.


As the discussion matured, six key priorities were identified:

1. Promoting a common language and core competencies for IPE.
2. Facilitating effective faculty development.
3. Resource development and dissemination.
4. Identifying effective models of IPE.
5. Advancing the science and practice of abilities and outcomes assessment.
6. Promoting interprofessional collaboration with policymakers.

Common language and core competency development were considered fundamental to all our other efforts. A panel was convened in March 2010 with two representatives appointed by each organisation. By early 2011, the draft of the core competencies was ready for review by a national group convened by a federal agency interested in interprofessional learning and team-based care. The competencies were published in May 2011 and disseminated in print and electronic formats.²


To address faculty development needs, IPEC drew on a time-tested faculty development model used by AACCP — an institute to which universities would send teams of faculty to work together for three days of intensive learning and planning. Each team would be comprised of three to five faculty members from at least three different disciplines. The curriculum included plenary presentations, case examples, tools and resources and a significant amount of guided “team time”. The teams returned to their respective campuses with a plan for implementing or expanding IPE efforts. To date, there have been eight IPEC institutes attended by more than 1,100 faculty at more than 250 institutions. Longitudinal assessment of the impact of these meetings reveals that teams have been able to implement their plans and have seen IPE expand across their campuses and schools.

IPEC also embarked on resource development with a grant from the Josiah Macy Jr. Foundation. A call for teaching and/or assessment resources for IPE was released in 2011 and small grants were awarded to teams that produced materials for public dissemination. MedEdPortal™ is an open access repository of teaching and assessment resources owned and operated by AAMC. A growing collection of resources for IPE resides in the portal.



IPEC leaders have met with a wide array of public and private sector groups to discuss the imperative for expanding meaningful IPE and collaborative practice in our healthcare system. This includes leaders from our respective accrediting bodies. In 2009, only nursing and pharmacy accreditation standards included explicit provisions for IPE. As of 2014, all six accrediting agencies include IPE in their standards. Further, like the professional bodies, the professional accrediting agencies have now begun discussions regarding collaboration.

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Collaboration within accreditation agencies

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Building on the success of the collaborations established by the US national professional bodies and in an effort to better serve the public good, in late 2014, several professional accrediting agencies formed the Health Professions Accreditors Collaborative (HPAC). Members of HPAC include the following professional accrediting agencies:

- Accreditation Council for Pharmacy Education (ACPE)
- Commission on Collegiate Nursing Education (CCNE)
- Commission on Dental Accreditation (CODA)
- Commission on Osteopathic College Accreditation (COCA)
- Council on Education for Public Health (CEPH)
- Liaison Committee for Medical Education (LCME)

The HPAC will meet regularly and will respect the independence of accreditation standards, procedures and decision-making of each participating accrediting agency. HPAC members are committed to discussing important developments in IPE and exploring opportunities to engage in collaborative projects. It is anticipated that as the HPAC evolves and develops activities, additional members from other healthcare accreditation organisations will join. The HPAC will communicate with stakeholders around issues in IPE with the common goal to better prepare students to engage in interprofessional collaborative practice.

As a first action, after reviewing each participating agency's accreditation standards regarding IPE, HPAC members agreed that the definition of IPE and competency domains for health profession students identified in the Interprofessional Education Collaborative (IPEC) report are fundamental to educational programmes in the health professions accredited by the HPAC members.¹

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Collaboration among student organisations

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In December 2014, the heads of the European healthcare students associations held their first joint summit at the offices of the European Students' Union in Brussels, Belgium. The purpose of this meeting was to focus on the importance of collaboration of all health providers for patient safety and continuity of care. Member organisations of this collaborative include:

- European Dental Students Association (EDSA)
- European Medical Students Association (EMSA)
- European Nursing Students Association (ENSA)
- European Pharmaceutical Students Association (EPSA)

During the summit, details from a pan-European survey of healthcare students about interprofessional developments were discussed. Key results suggest that although a majority of survey respondents envision themselves as working in interprofessional teams, many universities currently offer limited opportunity for interprofessional training. Students identified this as an opportunity for improvement and committed to attend events sponsored by each individual organisation, to organise joint events, and to endorse shared policy and advocacy statements (e.g. joint position on antimicrobial resistance).

Australia

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Summary

Healthcare is becoming more complex and, as a consequence, expertise is required from health professionals with different expertise working in collaborative teams.¹ In Australia, as with all developed countries, the increasing complexities of delivering healthcare is driven by an ageing population, increasing prevalence of chronic disease and challenges of health care delivery in rural and remote areas. Multi-professional team-based models are required to improve the safe and effective delivery of health care.²

In 2011, an interprofessional curriculum was developed and implemented through the Greenslopes Clinical School at Greenslopes Private Hospital with students from medicine, nursing, pharmacy, physiotherapy and occupational therapy participating.

The overall aim of the curriculum was to provide students with an opportunity to further develop interpersonal skills, improve collaboration and team work, and advance students' understanding and respect for the contributions of other healthcare professionals. A multi-professional group of experienced health clinicians developed the curriculum over a series of meetings. Activities within the curriculum are: communication and teamwork; case conferences and subsequent presentations; role play; and simulated ward rounds.

Students on placement at Greenslopes Private Hospital were expected to undertake the interprofessional curriculum. A total of 107 students participated in the curriculum, delivered on four occasions in 2011. The curriculum was delivered over six weeks on two occasions and over four weeks for the remaining two occasions.

The differences in curriculum duration were influenced by the placement timetables of the different student disciplines.

All students attending the curriculum activities were surveyed before starting and also on completion of the final session of the curriculum. The questionnaires used were the Readiness for Interprofessional Learning Scale (RIPLS) and the Interdisciplinary Education Perception Scale (IEPS). A sample of students (n=41) on clinical placements (who did not attend the curriculum activities) was surveyed using the same questionnaires. A small sample of student completing the curriculum participated in qualitative interviews. There was no formal assessment of students' learning or competencies as a result of the curriculum.

Outcomes

The overall results from the two questionnaires (89 completed questionnaires) reflected a positive change across all domains when comparing pre- and post-activity scores. The results from the RIPLS suggest that the students' change in attitudes reflect positively towards interprofessional learning; with the students wanting to share knowledge and skills, and to work with other students in a team. They also suggest students had improved understanding of the roles and responsibilities of their chosen profession and other health professions. The results from the IEPS suggest that the students' attitudes and perceptions towards interprofessional cooperation improved after the IPE experience. The students viewed their own profession as competent and autonomous, perceived better cooperation with other professions and within their own profession, and developed an improved understanding of other professions.

In the sample of students on clinical placements (n=41) who did not attend the curriculum activities there were no significant changes in students' attitudes and perceptions towards readiness for interprofessional learning. Perceptions towards their own profession and competency of their profession improved on clinical placements but perception towards other professions did not change.

Feedback from the qualitative interviews identified that "learning the roles of other professions and their contribution to a healthcare team broadened the students' perspectives on healthcare and increased their sense of self-worth and pride in their professions. In addition, being able to identify the relevance of the learning experience to their future practice motivated the students".³


The tutors involved in delivering the curriculum (n=7) were asked for feedback. They believed that the students communicated effectively, developed an understanding of the roles of the other disciplines represented in the group, collaborated and participated, and developed an understanding of the skills and contributions of the other disciplines within the group.



Conclusions

This approach was an effective step in advancing interprofessionalism among students. It is hoped that the skills and understanding that the students developed in the curriculum would be adapted into their future practice when they were working in teams as qualified practitioners.

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China

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Healthcare background

The health system in China encompasses both traditional Chinese medicine (TCM) and western medicine (WM), with health professionals from each approach often working alongside one another within the same hospital. In some ways this suggests a model of collaborative practice that is unique to China. It also highlights barriers that can interfere with successful integration, e.g. contextual influences, hospital management, philosophical divergence, Chinese healthcare education and interprofessional training. These same barriers can also interfere with collaborative practice as defined previously, i.e. nurses, pharmacists, physicians and others working together toward better care of the patient. Some of this integration depends on a clear understanding of practice scope within the individual professions. With regard to clinical pharmacy, this is an emerging area in China.

Examples of clinical pharmacy contributions on the team

The first anticoagulation clinic was created in 2013 in China. Today there are about 10 ACCs across the country, most of which are managed jointly by physicians and pharmacists. Fujian Medical University Union Hospital has created an online anticoagulation clinic, which is managed by a pharmacist.

This is the first of its kind in China. The online anticoagulation clinic includes an online forum, where patients and pharmacists meet virtually to discuss anticoagulation therapy and other patient concerns in a timely and efficient manner without requiring patients to return to the urban hospital for dosing adjustments. This enables the hospital to meet the growing demand of the patient population on anticoagulation therapy.

Preliminary results suggest that physicians and nurses have been receptive to this model because it provides good patient care while allowing them to allocate time to more critical areas of their respective roles. Discussions about the potential for expanding this model to include virtual care provision for patients with hypertension, diabetes, asthma and other chronic diseases are ongoing.

Another example comes from the First Affiliated Hospital of Xi'an Jiaotong University. In recent years, the Chinese government has enacted policies and laws to enhance the management of antimicrobial therapies. This has meant that new models of choosing initial agents and dosing of specific medicines has been required. This can be especially important when addressing severe, life-threatening syndromes such as haemorrhagic fever. In these models, the role of the pharmacist in the antimicrobial stewardship team is increasing.

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Kenya

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Healthcare environment

It is estimated that over 1.6 million patients are living with HIV/AIDS in Kenya, and current healthcare workforce statistics show that the country has only 1.8 physicians per 10,000 people.³ The Academic Model Providing Access to Healthcare (AMPATH), located in Eldoret, Kenya, has been providing comprehensive HIV care to more than 150,000 patients in western Kenya since 2001, in collaboration with Moi Teaching and Referral Hospital (MTRH), the second largest referral hospital in the nation. In order to reach the many patients affected by HIV/AIDS, it is important to consider task-shifting various components of HIV care.

Interprofessional teams in the adult internal medicine wards are responsible for daily patient care at MTRH. Physicians, nurses and pharmacists work together to provide interprofessional patient care. Each healthcare professional is responsible for their traditional aspects of care, such as administering medicines, daily assessments of the patient, coordination of tests and procedures. However, even with a coordinated and collaborative effort by these different healthcare professionals, there were still gaps in the care provided to the HIV-infected population. Each group is now working with a new member of the healthcare team, the HIV peer educator, to enhance services for this vulnerable population. This model is essentially a new way of extending the reach of the interprofessional team.

As one of the pioneers in peer-based care delivery, AMPATH extended the use of peer educators into the inpatient setting to up-skilling several aspects of HIV care from formally trained medical personnel to trained HIV-infected peers. In May 2014, peer educators were introduced into the AMPATH and MTRH systems. Peer-based care delivery approaches have the unique ability to break down psychosocial barriers by facilitating interaction between people with shared disease related experiences.

Research has shown that peer-based care has led to improvement in health outcomes of HIV/AIDS patients by improving their adherence to antiretroviral (ARV) medication, decreasing their risk of treatment failure over time and decreasing the number of patients who are lost to follow-up care.

In our model, peer educators are responsible for providing care at various points in the patient's hospital stay and beyond. In order to identify patients and increase HIV awareness, peer educators follow up test results for each patient and provide pre- and post-HIV test counselling on inpatient wards. Any patient who is newly diagnosed with HIV receives counselling and is enrolled in care when possible. Peer educators are responsible for discussing medication adherence and addressing reasons for non-adherence with the interprofessional team. They often assist patients and the medical teams with facilitating medication refills or with the initial filling of a new ARV regimen, allowing for coordination between inpatient and outpatient systems. After discharge, peer educators continue to work with patients to ensure outpatient follow-up and medication adherence, and help to connect patients with providers and others who can answer disease-related questions. Each inpatient healthcare provider works with peer educators to help improve patient health. They are able to communicate with all of the providers on testing, adherence, barriers to care and medication regimens.

Education between healthcare professionals and peer educators

The introduction of peers has sparked a different approach to all aspects of healthcare including care, education and research. With regards to care, peers represent a much-needed, patient-centric focus in care delivery in low- and middle-income country settings. With the limited resources available and socioeconomic challenges patients face, peer educators, who have struggled through similar conditions, are the perfect providers to improve outcomes and complement formally trained providers. The direct role peers have had in educating patients cannot be overstated because they are able to connect with patients in ways that formally trained providers are rarely able to.

Moreover, the impact on healthcare education for formally trained providers underlines the true magnitude of their efforts. Before the introduction of this model of care, providers often overlooked the socio-behavioural aspects of care and focused only on the clinical aspects of care delivery. However, after seeing the impact of the peer educators in advancing patient care outcomes as part of the interprofessional team, providers have begun demanding the incorporation of peers within the team.

To ensure the next generation of providers understand the importance of these overlooked socio-behavioural issues, it was incorporated interaction with peers into the experiential training of all learners who participate in this unique rotation.

The university is also in the process of incorporating peer-based education in the formal didactic curriculum for pharmacists and physicians in USA and Kenya. The multifaceted impact of the work of the peer educators has also forced us to redefine our typical approach to researching interventions in order to capture the many areas of patient life.

To date, 15 pharmacy students and interns have been able to work directly with the peer educators. The introduction of peer educators into the interprofessional team on inpatient medical wards at MTRH has improved communication between HIV-infected patients and the medical professionals who care for them. The HIV peer educator model at MTRH has largely been successful and may be scalable to other hospitals and clinics in western Kenya.

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Image: Peer educators providing care to patients.



(credit: Susie Crowe)

Lebanon

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Healthcare background

Lebanon, the smallest country in continental Asia, is located at the crossroads of the Mediterranean Sea and the Arabian hinterland. Its healthcare services are primarily offered through the private sector. The level of medical and paramedical education in Lebanon meets international curricular standards. Healthcare professionals are graduates of Lebanese schools, but many pursue advanced training abroad. Despite potential exposure to IPE during this foreign training, the concept of interprofessional patient-centred care is uncommon locally. Similar to most Middle-Eastern countries, physicians play the dominant role in patient-care decisions. The concept of clinical pharmacy is well understood, but not commonly implemented.

The Lebanese American University (LAU) is an 8000-student, leading, private higher education institution. It offers degree-granting health and social care programmes in medicine, nursing, nutrition, pharmacy and social work. A work group of faculty from all five programmes was established in 2010 to develop an IPE programme that would prepare LAU health professions graduates for practice and leadership in the interprofessional healthcare environment.

Intervention

The Lebanese American University Interprofessional Education (LAU IPE) Steps framework consists of a series of five half-day mandatory, extracurricular, longitudinal workshops offered throughout the curriculum of health and social care students (i.e. pharmacy, medicine, nursing, nutrition and social work). The series is equivalent to 15 contact hours, and delivered over two or three years, depending on the profession.

Students are grouped based on their amount of clinical experience and familiarity with interprofessional practice. The entry-level step includes students who have not yet had clinical learning experience regardless of their class year: Med I for medicine, sophomore nursing, senior nutrition, first professional year pharmacy (third academic year) and sophomore social work. The intermediate-level step includes students enrolled in their initial clinical experiences: Med II, junior nursing, dietetic interns, fourth year pharmacy and sophomore social work. Advanced-level steps include students who are nearing completion of their training, having had multiple clinical experiences and gained broader knowledge of healthcare: Med III and Med IV, senior nursing, dietetic interns, fifth year pharmacy and senior social work.

In each step, approximately 150 students attend a presentation to learn content and techniques about five topics: introduction to IPE and collaborative practice (entry level), interprofessional communication (intermediate level), teamwork and conflict management (advanced level), healthcare quality (advanced level) and ethics (advanced level). Content is delivered using a variety of presentation formats. After each presentation, students apply the content to case studies in small groups. Each group of eight to 12 students (representing at least three professions) is facilitated by a faculty member from one of the participating programs. Cases for each topic were written to ensure that all five professions have a valid role. An IPE certificate is distributed to each student who participates in at least four of the five steps.

Results

The LAU IPE Steps programme has been running since 2011; 950 students have participated and 74 faculty members have served as small group facilitators. In addition, the IPE workgroup organised a faculty workshop, streamlined clinical IPE experiences, and are moving to incorporate simulation activities.

A longitudinal, quantitative survey (including an adapted version of the RIPLS validated in a Middle Eastern population) was used to assess student perception of readiness for interprofessional learning, learning outcomes, and satisfaction with the learning experience. Open-ended questions were included to solicit students' perceptions of negative and positive aspects of the steps, recommendations for improvements and future IPE activities, change in perception of the other professions, and new information they planned to incorporate into their practice. Questionnaires were completed by students before IPE exposure and after each step. Data were analysed from one student cohort before and after they completed all five IPE steps.

Seven hundred surveys were collected with a response rate of 93%. Before IPE exposure students' perceptions of their readiness for interprofessional learning was generally favourable, with differences across genders (stronger professional identity in females compared to males, $P=0.05$) and across professions (higher teamwork and collaboration in pharmacy and nutrition students compared with other professions, $P=0.05$; and lower patient-centredness in nursing students compared with others, $P=0.025$).

After participation in the IPE steps, students showed enhanced readiness for interprofessional learning and differences between genders and professions were no longer significant. Also, a gradual increase in teamwork and collaboration scores was found across the IPE steps, with an overall 10% increase between baseline and step 5. Participants were satisfied with the learning experience and evaluation scores showed that all IPE learning outcomes were met.

Outcomes

This study demonstrates that the LAU IPE Steps is a framework in which interprofessional readiness and learning can be quantitatively assessed at three pedagogic levels in large cohorts of students from various professions. In addition, this framework offers a successful integration of IPE into pre-existing curricula (pharmacy) as well as newly established ones (medicine, nursing and nutrition). The findings suggest that the continuation of comprehensive and mandatory IPE throughout the curriculum promotes positive changes in attitudes amongst participating students. Our future plans include linking IPE steps to courses of the curricula of all professions.

Image: Students working together.



(credit: Rony Zeenny)

Malaysia | Monash University Malaysia

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Healthcare background

Malaysian healthcare, in general, is still conventional, with medical doctors seen as the primary decision-makers. Public hospitals and clinics, which are still largely multi-professional and not yet interprofessional in approach, are moving towards team-based practice. Pharmacists' involvement in these teams is limited to certain diseases and areas of practice. Since 2004, in public hospitals, pharmacist-run clinics, known as the medication therapy and adherence clinic (MTAC), have been launched in a few areas, such as diabetes, asthma, cardiovascular diseases, renal diseases and HIV/AIDS. Interactions between the health professionals are still mainly based on referrals. Joint case management is rare and confined only in the wards and special clinics. Collaborative practice in community settings between community pharmacists and GPs are almost non-existent. In 2007, the Ministry of Health funded a nationwide project, involving pharmacists, GPs, nurses and dietitians in the management of metabolic syndrome and cardiovascular diseases in the community. This project was successful, but it was not sustainable. IPE and practice has gained more popularity in education and healthcare institutes in Malaysia in the past five years.

Intervention

In 2011, a two-credit hour, co-curricular module (equivalent to 80 hours' notational learning time) was developed aimed at introducing the concept of IPE and collaborative practice to first-year students in allied health, audiology and speech therapy, dentistry, medical imaging, medicine, nursing and pharmacy (n=87).

The students were divided into eight groups, consisting of nine to 11 students from different faculties per group. Each group was facilitated by two lecturers from different professions. The groups met every Saturday for seven consecutive weeks. The group activities included observation and presentation of the roles of a health profession, IPE case studies and a community project.

On completion of the module, the students were expected to be able to describe the roles of different health professionals, communicate effectively, and work together with students from different health professions. Assessments were based on the eight learning outcomes focusing on generic skills. The instruments for assessments were personal and group portfolios, mentor and peer assessments and a poster presentation.

Outcomes

Quantitative data was collected on perception of students on IPE (before and after intervention); perception of students on the roles of their own professions (before and after intervention); perception of students on the roles of other healthcare professions (before and after intervention); and students' satisfaction on the course.

Qualitative data, was also collected on students' reflections on working with other health professions, and students' feedback on the course.

Eighty students (92%) successfully completed the course with average score of 78%. Seventeen different healthcare professions have been observed and eight community projects were carried out. The majority wrote that the observation of another health profession was an eye-opener:

"Before this visit, I have no knowledge about the role of optometrists. I feel happy because I get the chance to learn about other health discipline."

Audiology student

The community projects enabled the students to work as a team. Five groups chose health education in child care centres:

"I am very happy that we work as a team. We planned the visit to the orphans at a shelter home, baked and sold cupcakes to raise fund. We taught the children the proper way of brushing teeth with a video and did some games with them. It was fun for everybody."

Pharmacy student

In the course evaluation most of the students agreed that the course was well organised (76%) and appropriate for their level (83%). To the majority the course increased their understanding about interprofessional learning (95%), and enabled them to work with students from other health disciplines (92%). Many students (81%) favoured the introduction of IPE in the early years of their undergraduate study. There were no significant differences between students from the different programmes. The course achieved its objectives and was well received by the students.



Impact and implications of the intervention on practice

Exposure of IPE in the first year of the study improved students' perception of IPE and enabled the students from different healthcare disciplines to work together in a community project.

This project was insightful for academics from different faculties in the health cluster. It gained recognition from the National University of Malaysia, such that the university made IPE the theme for its teaching and learning conference in the following year (2012) and decided to further develop the co-curriculum modules to enable the students from different faculties (healthcare and non-healthcare) to learn with, from and about each other.



Malaysia | University of Malaya

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Traditional healthcare roles of healthcare professions

As described above, healthcare in Malaysia is primarily physician driven. Further, at this time, there is no dispensing separation. Therefore, general practitioners (GPs) or specialists from the private sector prescribe medications which are dispensed in their clinics by non-pharmacists. Prescriptions from most hospitals, however, are dispensed by a pharmacist or pharmacy technician.

Jigsaw learning technique

Prescribing skills workshops have been conducted annually since 2009 as interprofessional learning between medical and pharmacy undergraduate students. These workshops are part of the pharmacy curriculum, but for the medical programme plans are in progress to incorporate them into the curriculum. So far, six cohorts of medical and pharmacy students have attended these workshops.

The workshops used a “jigsaw learning” technique¹ and took about three hours. Each workshop was divided into four sessions: introductory (20 minutes), expert groups (50 minutes), jigsaw groups (90 minutes) and debriefing (20 minutes). The introductory session exposed the students to common dilemmas in prescribing and also the workshop procedure. Each workshop involved 32 to 36 medical and 16 to 18 pharmacy students. The students were divided into two jigsaw groups and were assigned to six expert groups. The expert stations were arranged according to the six prescribing steps recommended by the World Health Organization² and each station was conducted by a facilitator (a pharmacologist, a pharmacist or a doctor).

After the expert stations, the students reconvened in their jigsaw groups and were further divided into three subgroups, which consisted of students from the six different expert stations so that they could teach each other.

Each jigsaw subgroup was required to solve a different series of six case scenarios. One group member would present the case to the whole jigsaw group and the facilitators would challenge the presenters to provide rationales for their answers. Prompt feedback was given by the facilitators to close each case presentation. The facilitators also observed and encouraged interaction between the medical and pharmacy students as well as between student experts and student learners.

The final debriefing session summarised the lesson of the day into the four Rs: Right diagnosis (for medical doctors)/ Right patient (for pharmacists), Right drug, Right dosage, and Right duration. The workshops were evaluated by facilitators’ feedback, independent observer reports and students’ evaluation forms.

The working principles of the jigsaw learning technique accommodate learning within the community of practice.³ In a hospital, the community of practice, are healthcare providers who share the concern of treating patients. Therefore, in the prescribing skills workshops, medical and pharmacy students were placed in an authentic environment.

Outcomes

A 10-item instrument, the Student Satisfaction Interprofessional Instrument (SSII) was developed to evaluate students’ perception regarding the interprofessional workshops. The total scores of the SSII were computed, with higher scores indicating more positive perception.

Thus far, 894 students attended the prescribing skills workshops and completed the SSII. Initially a 12-item instrument was developed and tested on 108 students who attended the first series of workshops from August 2009 to February 2010. When two of the items were excluded, the Cronbach’s alpha value became 0.809 and all the items had corrected item-total correlation of above 0.2. This implies that the 10-item SSII has good internal consistency and all 10 items are related to the total score. From September, 2010 to October, 2012, another 489 students participated in the workshops and completed the SSII. This group of students showed similar results, with Cronbach’s alpha value of 0.866.

From October, 2013 to April, 2015, pre- and post-workshop evaluation was performed on 297 students. In general, the mean total scores of the SSII were around 80 and there were no differences in scores between the medical and pharmacy students except for the third period of the workshops. In addition, the SSII scores obtained after attending the workshops were significantly higher than those before the workshop [mean score (standard deviation)=80.1(14.9) and 71.2 (13.4), respectively, $t=-10.744$, $P<0.001$]. This indicates that the perception of students towards interprofessional learning improved after attending the workshops.




Impact and implications of the intervention on practice

The interprofessional prescribing skills workshops received positive feedback from the students as well as from the facilitators. The workshops can be seen as a starting point to ignite and inspire a stronger sense of collaborative learning in an ultra-competitive Asian educational culture.

It is hoped that this will promote better interprofessional collaboration between the doctors and pharmacists in future. Collaboration between these two healthcare professionals is essential to reduce medication misadventure and to provide safer and better patient care.

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Healthcare environment

Pharmacy and medical education are new professional degree programmes in Namibia. The University believed it was all the more important to teach students interprofessionally in areas of genuine and urgent need, for example, infectious diseases. Tuberculosis (TB) in particular is a priority health area for the Republic of Namibia, where it had a prevalence of 603 per 100,000 in 2010. With the high prevalence of HIV, appropriate management of TB is even more critical.

Medical and pharmacy students are taught together in about a third of their degree modules but, in order to ensure instruction was truly interprofessional, the students are brought together in the clinical setting with a team of clinical instructors who also taught the value of different professions in optimising patient care.

Intervention

Fourth professional year pharmacy students and third professional year medical students completed a TB clinical rotation together in March, 2015. Each morning, medical and pharmacy students would pair together to evaluate patients at the TB hospital, identifying health-related needs and drug-related problems. Medical students shared experience with physical examination skills and pharmacy students provided education on medication-related needs of the patient.

Students presented patients together to attending pharmacists, physicians and nurses at the end of each morning.

Outcomes

Observations from faculty members included that students would review the medical charts together and that each student had an important role in patient care. It was not unusual for the pharmacy students to take the lead in identifying resources and team members on the ward to assist in managing patient issues. Further, with the large number of languages in Namibia, students found that they needed each other to translate patient encounters. Both medical and pharmacy students were evaluated and responsive to the interprofessional teaching and suggested improvements.

The biggest challenges were scheduling to ensure different student groups from various professions were able to participate simultaneously, and that faculty staff were available. The pharmacy curriculum is now being amended to include a formal and distinct entity to create dedicated space for interprofessional clinical instruction. In future iterations of the experience, attention will be paid to opportunities for additional clinical learning together and ensuring that schedules overlap more ideally to provide a maximally integrated interprofessional experience.

Impact and implications of the intervention on practice

The medicine and pharmacy schools have only recently graduated their first cohorts. Further evaluation of the impact of these experiences on future practice is ongoing.

Image: UNAM medical and pharmacy students on tuberculosis rounds.



(credit: Lauren Jonkman)

Philippines

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Healthcare environment

Healthcare professionals from various disciplines have minimal interaction in terms of actual case management of patients. The persisting culture features the medical doctors as the major, if not the sole, decision-maker when it comes to health matters. This rigid hierarchy in human resources for health makes other healthcare professionals less confident and enthusiastic to contribute in the decision-making process even if their competencies allow them to help improve outcomes of care. It is desired that healthcare professionals would have more opportunities to communicate openly and foster respect for each other's expertise in order to improve the service delivery and health outcomes of patients. A responsive healthcare system results when healthcare professionals do not work in silos.

Intervention

The IPE activity in the University of the Philippines Manila has 17 teams. Twelve of the teams were composed of a nursing student (senior/4th year), a medical intern (5th year) and a pharmacy student (senior/5th year). The other five teams were composed of a social work student (senior/4th year), a medical intern (5th year) and a pharmacy student (senior/5th year). Each team also had a resident from the Philippine General Hospital Department of Family and Community Medicine, and was supervised by one or two faculty preceptors and a community organiser.

The IPE activity is comprised of six whole-day sessions. The activities were held in the community (off campus). Each whole-day session was composed of lectures on concepts related to healthcare, small group activities for interprofessional team building, home visit or personal encounter with the patient and family and case management discussions. To accomplish these, the teams were instructed during the orientation first to identify possible patients or families residing in the community who require interprofessional care.

The bases for identifying these patients or families were: (1) a family whose index patient has several comorbidities, (2) a family with several members who are sick and (3) a family with many existing risk factors. Once the team had engaged and obtained the consent of the patient or family for management, the following steps included assessment and goal-setting, patient and family intervention, monitoring of outcomes and discharge. An instructional design was provided to guide the facilitators and standardise the learning activities. During the last session, each team gave an oral presentation to the faculty and staff preceptors, highlighting their experience as part of an interprofessional team.

Outcomes

During the first session, a pre-interprofessional care (IPC) questionnaire and the Modified Interdisciplinary Education Perception Scale were answered by the students. The same perception scale was applied at the last session. The IPC questionnaire contained open-ended questions related to: (1) students' understanding of IPC in the context of community health, (2) gains from the IPE experience, and (3) apprehensions related to self and other stakeholders. The Modified Interdisciplinary Education Perception Scale was used to assess the effect of interprofessional approach among the students in terms of autonomy and competency, perceived and actual need for cooperation, and understanding roles.

Most of the students perceived IPC as an interdisciplinary programme that aims to nurture and enhance the collaboration among future healthcare professionals in order to maximise healthcare delivery by providing a holistic approach in the treatment of diseases in the community. Most considered the experience an opportunity to develop interpersonal skills with other healthcare professionals and patients. They believed that, through this experience, they could understand the most common health-related issues in communities, and plan healthcare strategies with other professionals to address limitations of the current health system. When asked about their main concern for themselves, some students believed they were not ready to work with students from other healthcare professions.

They were worried about how they can contribute to the team since they believed that their knowledge and communication skills are inadequate. The students also raised concern that some community members and patients may resist the interprofessional approach resulting in less support and participation from them.


Mean scores in all items of the perception scale improved after the IPE activity. For the pharmacy students, significant positive differences were noted for some of the items: Individuals in other professions are able to work closely with individuals in my profession (P = 0.0271); Individuals in other professions respect the work done by my profession (P = 0.0019); Individuals in other professions think highly of my profession (P = 0.0004).

Working closely with one another may have facilitated a clear understanding of the roles, competencies and capabilities among health professionals. This newfound respect and high regard may have made them feel that their profession is truly essential, especially in the context of interprofessional care. This prompted them to interact effectively and trust the other members of the team: Individuals in my profession work well with each other (P = 0.0035); Individuals in my profession trust each other's professional judgement (P = 0.0203); and, Individuals in my profession think highly of other related professions (P = 0.0052).

There were mutual trusting relationships among the students of various healthcare professions. Likewise, the respondents perceived that individuals in other professions were willing to share information and resources with them (P = 0.0426).

Impact and implications of the intervention on practice

The IPE activity provided the students an opportunity to interact directly with students from other healthcare professions. From this interaction, they were able to identify both their strengths and limitations as future healthcare professionals, as well as to correct some misconceptions about themselves and others. They learnt new approaches to patient management and appreciated their roles as healthcare providers with a collaborative practice perspective. In effect, patients who were managed by these teams appreciated the more holistic approach towards them.



United Kingdom

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Healthcare environment

Pharmacists, whether working in a community or a hospital setting, encounter patients with pain several times a day. Because pain is so complex, involving sensory, emotional and evaluative components, multi-professional care is routine in clinical practice.

Intervention

An interprofessional learning mini-conference was developed during a comprehensive redesign of the undergraduate pharmacy curriculum at the University of Nottingham using an integrated approach to be more patient-focused. The mini-conference occurs during a module on pain and its management that covers relevant aspects of physiology, pharmacology, medicinal chemistry, pharmaceuticals, clinical practice and professionalism and leadership and provides sufficient background scientific information to understand and describe the clinical use of commonly used analgesics and potential targets for novel analgesics.

The mini-conference was an exciting opportunity for students to participate in collaborative learning and gain a deeper appreciation of the work and knowledge base of another profession. The aims of the conference were to develop clinical reasoning using problem-based learning via the consideration of holistic approaches to improving patient care and to develop novel multi-professional approaches to patient care.

After an initial introduction by faculty members from both schools, students were placed into small interprofessional groups to discuss a patient case study. The cases used were based on real patient scenarios and in both primary and secondary care settings. Each scenario included information on current symptoms and their history, previous medical history, and relevant psychological and social background.

Applying clinical problem solving skills, each group worked independently to create a short- and longer-term management plan for the patient in their allocated case and they then worked collaboratively to choose and develop one aspect in more detail for presentation as a poster.

Several groups were provided with the same case study, but groups approached the case from different angles and concentrated on different aspects of the patient's care. Staff from both pharmacy and physiotherapy schools facilitated groups. There was also a live Twitter feed monitored by the faculty team where comments were posted and questions aired.

The format of the conference also required students to develop team-working skills and demonstrate efficient time management. All posters were displayed at the end of the session to allow students the opportunity (as a team) to view other posters, as well as discuss their own work with students from other groups. Posters were photographed and were made available to students following the conference. Students were required to reflect on their learning at the conference and submit a continuing professional development record for a professional competencies module.

Outcomes

In the first year that the conference was run, there were over 160 students, but the number of pharmacy students greatly outnumbered the physiotherapy students. However, in the subsequent year it was possible to include another cohort of physiotherapy students and two cohorts of sports science students. The group size was eight or nine students (five to six pharmacy students and three physiotherapy and sports science students).

Student feedback on the session has been extremely positive and encouraging. More than 60% of students thought the IPL conference provided valuable experience for future practice and 70% left with a greater understanding of the other profession and their contribution to patient care.

Image: Pharmacy and physiotherapy students working collaboratively on a pain case.



(credit: Roger Knaggs)

Uruguay

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Healthcare environment

The British Hospital in Montevideo is seen as a progressive institution in Uruguay. It is growing not only in bed numbers but also in the types and quality of services provided. New institution-wide policies, such as a safety policy, are being implemented.

Intervention

The pharmacy service of the British Hospital has a certified unit for compounding cytotoxic medicines. Its personnel — mainly pharmacists, pharmacy technicians and nurses — are responsible for compounding and dispensing cytotoxic medicines. To maintain quality standards, pharmacists have implemented written procedures that include validated prescriptions and production orders, microbiologic, temperature and pressure control of the unit's areas, and semi-quantitative quality control of the final product, as well as, when necessary, light protection and correct temperature storage of the final product.

In coordination with the team leader nurse, oncology nurses rotate their activities between compounding and administering cytotoxic medicines. Compounding following the established procedures opens a new technical universe for nurses, in spite of their established competency in aseptic techniques.

Nurses are now required to undergo training by the chief pharmacist as a part of the hospital's continuous education programme for oncology nurses. The course of cytotoxic medicine preparation aims to integrate theoretical knowledge (prescription validation, equipment certification, procedures validation, monitoring, etc) with a practice experience component.

The education (theoretical and practical training) occurs once a year. An average of 12 nurses, including the chief nurse, participate in the theoretical training and only the new oncology nurses participate (around four people) in the practical training.

The training is assessed in a number of ways:

1. Practical skills observations of participant technique is done by a Cancer Care Unit experienced nurse and the director of pharmacy to assess and assure competency of each trainee.
2. Number and topic of phone calls related to the administration of IV oncology medicines from the Oncology Care Unit to the pharmacy.
3. Number of medicines that must be prepared twice because of the expiration time of the one that was prepared earlier.
4. Number of notifications for adverse drug reactions (ADR).
5. Number of patients that go to the pharmacy for information on oncology treatments, kind of medicines, side effects of medication.

Outcomes

Performance of Cancer Care Unit nurses in the administration of cytotoxic medicines improved significantly when they were trained in pharmaceutical procedures for the preparation of these drugs and quality assurance processes. This training seemed to change their point of view on cytotoxic drugs administration, improve communication among health professionals and patients, and enhanced the interprofessional collaboration between pharmacists and nurses.

PART 4

THE WAY FORWARD?

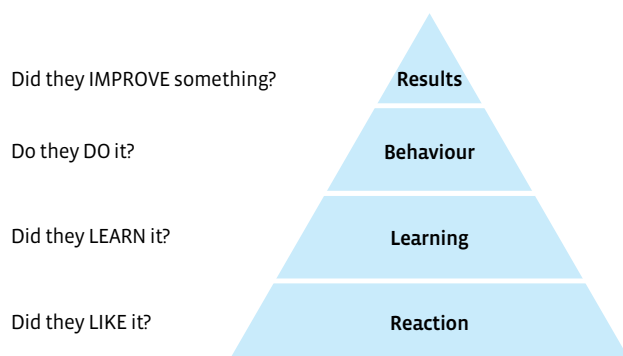
Towards a day when interprofessional care is the global standard

Filling the evidence gap

As the global case examples illustrate, pharmacy programmes worldwide are exploring training collaborations by casting a wide net, initiating IPE programmes in both classrooms and clinical settings and using a variety of pedagogical models. As the amount of extra time in formal pharmacy curricula is saturated, however, a stronger evidence base will be needed in order to justify allocating increased resources to interprofessional instruction.

In order to achieve this, Reeves *et al*² have set a clear guideline for an evidence-based evaluation of IPE efforts. Currently the predominant model of IPE evaluation focuses on the lower levels of Kirkpatrick's evaluation typology (see Figure 1), in particular, learner reactions. Although these outcomes are certainly beneficial to assess, there is a need to move toward the higher levels of Kirkpatrick outcomes, including change in practices and improving patient health outcomes. Not only will evaluation of higher-level outcomes better outline the long-term benefits of IPE, it will also meet the needs of national stakeholders (policymakers, funders and regulators) as their interest lies with how IPE will change behaviour and, ultimately, result in better healthcare.

Figure 1: Kirkpatrick's four-level evaluation model (adapted from Kirkpatrick D. *Evaluating training programs*, 1994).



In the report “Measuring the impact of interprofessional education on collaborative practice and patient outcomes”, the Institute of Medicine promotes an interprofessional learning continuum model. This model supports the theme that IPE should not only happen in foundational education but should also continue through postgraduate education and in continuing professional development.

This learning continuum should result in positive learning outcomes for individual healthcare workers and positive health system outcomes. This suggests that as new training programmes are initiated and as substantial curricular changes are planned (e.g. discussions of where clinical training occurs as part of pre-licensure training), pharmacy education should endeavour to include a wider variety of stakeholders in these discussions.

From a curriculum perspective, for example, all health professions study pharmacology to some extent. Perhaps as pharmacology courses are revised and updated, medicines use will provide a common area of interest across learners that can serve as an opening for learning about, from and with one another. For example, an interprofessional discussion about the management of pain medicines — mechanism, efficacy, side effects, prescribing, cost — and how it is viewed by students of medicine, nursing, pharmacy, physical therapy, social work, nutrition, etc., can be illuminating and team building. Other common professional curricula, such as quality improvement or communication science, may be jointly taught in the same classroom among professions early in their training.

The learning continuum also suggests that although it is never too early to begin to consider interprofessionalism, it is perhaps also never too late. This is a critical because in many countries, CPD processes for healthcare professionals are only just developing. When that is the case, it may be prudent for discussions about interprofessionalism to occur from the earliest phases of systems development to avoid building (and then rebuilding) systems that better meet the needs of contemporary populations. Ultimately, having active practitioners who are more comfortable with accountability and responsibility via empowered teams serves to provide better mentors for early learners and solidifies team-based approaches as the standard of care.

Conclusions

This report attempts to describe some of the key tenets of IPE, its relationship to collaborative practice, and its emerging link to better patient care. Through the diversity of the case studies, *FIPed* has highlighted that the pharmacy context for IPE is not unlike the wider health professions context.

The challenges in implementing IPE that have been described previously in the wider literature — curriculum, leadership, resources, stereotypes, students' diversity, IPE concept, teaching, enthusiasm, professional jargon, and accreditation — hold true for pharmacy. There is a potential for subtle variations by culture but, as highlighted in countries where the need for rapid scaling up of the number of health professionals is more urgent, this also provides a window for a different approach to skilling up these new healthcare providers.

There are tremendous opportunities for the pharmacy profession to contribute substantially to this wider conversation, locally, regionally and globally. To do that, FIP will continue to support the WHO Transformative Education movement by encouraging its members to engage in this interprofessional dialogue and submit case studies to the online system (<http://whoeducationguidelines.org/>).

FIP's recently launched PharmAcademy (<http://pharmacademy.org/>) resource serves as a platform for sharing informally, through its discussion forums and publishing formally through *Pharmacy Education* journal, evidence to strengthen the link between IPE and positive patient outcomes.

This report focuses on IPE from a pharmacy context, but perhaps by 2025, what is now called IPE will be the standard for all health professions training and what is now called collaborative practice will be the standard for all patient care.

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Annex 1. Examples of Collaborative Meetings/Organisations

Year	Meeting or Conference	Location in WHO Region
2007	Collaborating Across Borders (CAB) I	Americas
2009	Collaborating Across Borders (CAB) II	Americas
2011	Collaborating Across Borders (CAB) III	Americas
2013	Collaborating Across Borders (CAB) IV	Americas
2014	All Together Better Health VII: The 7th International Conference on Interprofessional Practice and Education	Americas
2014	Interprofessional Education: Building a Framework for Collaboration	Americas
2014	Josiah Macy Jr. Foundation Web Conference: Partnering with Patients, Families, & Communities to Link IPE	Webinar
2015	Collaborating Across Borders (CAB) V	Americas
2015	Where's the Patient's Voice in Health Professional Education 10 Years On?	Americas
2015	IPL Dublin 2015	Europe
2015	The 5th European Conference on Interprofessional Practice and Education	Europe
2015	2nd Annual National Patient Relations Conference	Americas
2015	International Conference on Patient- and Family-Centred Care: Partnerships in Care, IPE, & Research	Americas
2015	Interprofessional Education: Building a Framework for Collaboration	Americas
2015	Building Interprofessional Education for Population Health	Americas
2015	NIPNET 2015 Conference	Europe
2015	Interprofessional Health, Education and Practice (IHEP) International Conference 2015	Western Pacific
2015	Malcolm Cox, MD, Institute of Medicine Study Chair will share conclusions & recommendations from April 2015 Report: Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes.	Webinar

Annex 2. Acknowledgements

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Canada – John Gilbert, University of British Columbia.

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