Introduction. The goal of the FIP-UNESCO-UNITWIN Center for Excellence in Africa (CfEA) program established 10 years ago is to transform pharmacy education and workforce (academic, practice, research) to meet societal health needs in CfEA member countries (Ghana, Kenya, Namibia, Nigeria, Uganda, Zambia) aligned with the FIP-UNESCO-UNITWIN Program on Global Pharmacy Education Development. Three important events occurred recently that guided CfEA efforts:

- 2016 FIP Nanjing Conference on Pharmacy Education
- Governance changes in CfEA
- Partnership with the SPHEIR Kenya-Nottingham program to develop a national competency framework for pharmacy education in Kenya (see related poster by Claire Anderson)

FIP Global Competency Framework (GbCF) and FIP Nanjing Statements and Pharmaceutical Workforce Development Goals (PWDGs 1-10 & 13) were utilized to identify gaps in pharmacy education and workforce to develop evidence-based transformation programs.

Design. Representatives from all CfEA schools were tasked with utilizing these FIP resources to map their curricula, educational standards and workforce strategies to identify gaps and determine priorities for advancing their pharmacy education programs. Each country reported their findings at the CfEA meeting in Lagos, Nigeria in June 2018.

Results. Numerous gaps and needs were identified, many common to all schools, e.g., interprofessional education. Systematic and thorough discussions led to agreement on three priorities:

- Academic Capacity (quantity and expertise)
- Needs-based Education Strategies
- Advocacy (enabling environment for education and practice)

Working groups (WGs) were formed for each priority, each with a lead from one of the CfEA members; monthly conference calls provided for support and progress updates.

Results of the WGs will be reported at the June 2019 CfEA annual meeting in Mombasa, Kenya to be held in conjunction with the Pharmaceutical Society of Kenya (PSK) who, along with other stakeholders (WAPCP, CPA, APF, KPSA), will provide their insights into pharmacy education and workforce needs.

Outcomes. In addition to outcomes related to the three priority areas, i.e., progress and continued action plans to advance pharmacy education, two other expected outcomes of the Mombasa meeting:

- a policy paper on pharmacy education in Africa and
- a session on pharmacy education at a planned FIP Regional Conference in Africa in 2020.

Outcomes of the Mombasa meeting will be provided at the Monash Pharmacy Education Symposium.

Conclusion. The UNITWIN CfEA program is the first multi-country effort to effectively use the FIP Nanjing Statements, PWDGs and GbCF to develop a program for transforming pharmacy education and workforce to meet country and regional health needs.

www.fip.org; search publications – reports/reference papers
LEARNING WITHIN AN ONLINE COMMUNITY OF PRACTICE
FOR LOCUM PHARMACISTS

Dr Alison Astles, University of Huddersfield, UK    A.M.Astles@hud.ac.uk

Aim

To determine the learning value of an online community of practice to locum community pharmacists in the UK.

Study design

Two months’ posts from an online chatroom created for UK locum community pharmacists were analysed in 2016.

Ethical approval was obtained from the University of Central Lancashire, UK. Anonymised text was analysed using a novel method that integrated Bales’ interaction process analysis and thematic analysis.

Results

Small, temporary social groups were created online, which met definitions for communities of practice. Posters were forming identity as pharmacists via their interactions in the following ways:

- **Value making** – sharing opinions and views on what it means to be a pharmacist
- **Creating a common culture** – ‘thinking like a pharmacist’
- **Sharing information** – supporting a joint opinion-forming base that develops ideas on pharmacy practice
- **Community formation** – helping develop common language and values where ideas can be shared

Conclusion

The study showed the chatroom was composed of an engaged, respectful, vibrant and sometimes challenging group of individuals discussing pharmacy issues online. It demonstrates the value of online networking to development of professional identity, culture and knowledge.
A comparison of graduate-entry and undergraduate-entry pharmacy student performances in final year oral vs. written examinations

Suzanne Caliph, Angelina Lim, Tina Brock and Carl Kirkpatrick
Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Australia

BACKGROUND: Monash Pharmacy offers recent graduates with a relevant science degree accelerated entry into 3rd year after successfully completing an intensive summer bridging unit (Introduction to Pharmacy).

OBJECTIVE: To compare oral vs. written examination performances of graduate-entry (GE) vs. undergraduate-entry (UE) pharmacy students in their final (4th) year capstone unit (Integrated Therapeutics - Preparation for Practice).

METHOD: We performed retrospective analysis of OSCE and written examination results of final year students over 3 years (2015-2017).

RESULTS: Both GE (n=135) and UE (n=500) groups performed better in the written exams involving clinical problem-solving case studies compared with OSCE stations involving role-play scenarios for problem solving and oral communication.

- In written exam, UE students performed better than GE students (mean exam score 81% vs. 78%) with significantly higher proportion of UE students (61% UE vs. 44% GE) receiving high distinctions (HD = marks ≥80%).
- In comparison, GE students performed better in oral exam (OSCE) with higher scores (mean OSCE score = 70% vs. 68.5% for GE vs. UE). However, <20% of students from both groups achieved high distinctions in their OSCE (18% GE vs. 16% UE).
- A weak positive correlation was seen between written and oral examination marks for both groups: Pearson’s r = 0.3 and 0.2 for GE vs. UE groups.

CONCLUSIONS: Mature GE students and younger UE students achieved similarly in written and oral exams, but with different strengths, likely related to their learning and life experiences.

- Significant differences in written vs. oral exam results could be attributed to differences in the levels of Miller’s pyramid of competence assessed in these examinations.
- Written examinations traditionally assess “Knows” and “Know-hows” whereas clinical oral examinations (such as OSCEs) are designed to cover both cognitive and behaviour domains assessing knowledge, skills and attitudes. In our study, OSCE (oral examination) presented to be a more robust and challenging assessment for both graduate-entry and undergraduate-entry pharmacy students at final year level.
- Assessment design and support activities catering for mixed learner groups (such as GE and UE groups) need to be more complex but also present interesting opportunities for peer learning.
- Findings from this study contributed toward the design and development of the graduate-entry pathway for our new Vertically Integrated Master of Pharmacy curriculum.
Current and emerging patterns of pharmacist pre-registration training in Great Britain

Damian Day, Head of Education, General Pharmaceutical Council

1. Study objective

To establish whether multi-sector pharmacist pre-registration training is expanding in GB and, if it is, how it is affecting the training experience

2. Design: analysis of -

• Multi-sector pre-registration training places in a national application scheme, Oriel (excludes those outside the scheme and in Scotland)
• Multi-sector pre-registration training plans
• Evaluations of multi-sector training pilots

3. Results

• There has been a significant expansion in multi-sector pharmacist pre-registration training in Great Britain (from c.30 places historically to 248 in 2018-2019 (and rising)), supported by national initiatives in England and Wales
• Historically, multi-sector training placement numbers have been low, comprising 1. Industry paired with either Hospital or Community and 2. Hospital paired with Community
• The main growth has been in GP Practice placements paired with either Hospital or Community placements
• Some schemes are serial (using adjacent block of training in 2/3 sectors), some are in parallel (training in 2/3 sectors every week)
• Initial analyses of pilots report that multi-sector trainees are: 1. well rounded (with a better understand of a range of other healthcare professionals), 2. more flexible (having trained across sectors), 3. more confident decision makers (drawing on wider experience than single sector trainees) and 4. effective communicators. Blocks of training have been added to later iterations of parallel schemes to provide continuity at key points

4. Conclusion

• There has been a significant (and increasing) expansion of multi-sector pharmacist pre-reg places in GB (reflecting an increase in multi-sector clinical working by pharmacists)
• Multi-sector training including GP Practices represent the bulk of the growth
• Multi-sector training is producing more adaptable and communicative trainees who draw on a breadth of experience not available to single sector trainees
ASSOCIATIONS BETWEEN PHARMACY PREREQUISITES AND OSCEs
AT THE UNIVERSITY OF SASKATCHEWAN

Roy Dobson, Ed Krol, Michael Theaker, Jane Cassidy
College of Pharmacy and Nutrition, University of Saskatchewan, Saskatoon, Canada

Objective: To identify academic prerequisites associated with interactive and non-interactive Objective Structured Clinical Examinations (OSCE) performance in the undergraduate pharmacy program at the University of Saskatchewan (U of S).

Design: Retrospective data consisted of the final grades of prerequisite courses and OSCE scores of 1183 students admitted to the undergraduate pharmacy program of the U of S from 2003 to 2017. Interactive and non-interactive OSCE scores from four sets of OSCEs in years 3 and 4 of the pharmacy program (Phar 465 and Phar 565) were calculated. Associations between OSCE scores and prerequisites were analysed using Pearson correlation and stepwise linear regression.

Results: Few significant correlations seen between the BSP prerequisites and OSCE scores. A large number of statistically significant correlations found with the Pharm D prerequisites; however, these correlations were uniformly weak (0.10 to 0.20). Courses in Biochemistry, Math, Microbiology, Nutrition, and Physiology showed the strongest association with interactive OSCEs. The strongest associations with non-interactive OSCEs seen with Math, Microbiology, and Statistics. Linear regression analysis produced very weak explanatory models.

Conclusions: OSCEs assess a range of clinical skills including verbal communication, professional judgement, application of knowledge, and problem solving ability; thus, OSCEs might serve as an important proxy for measuring future clinical success (McLaughlin et al, 2015). Our previous research identified strong associations between persistent academic success in the pharmacy program and prerequisites seen to require higher-level learning skills such as knowledge organization, skill mastery and knowledge synthesis and application (Krol, Dobson & Adesina, 2019). The weakness of the associations between the prerequisites and OSCEs, while consistent with other findings in the literature, suggests limits to the scope of clinical and problem-solving skills currently assessed at the U of S (and possibly other training centres) as they relate to higher-level learning.

References
Objective: Optimizing student learning in relation to nutrition is essential to ensure relevant nutrition advice to public health. Hence, we conducted an exploratory study to assess the knowledge of final year undergraduate pharmacy students of various aspects of nutrition.

Design: A 30-single best answer multiple choice item was developed as an informal assessment to evaluate students’ knowledge of basic nutrition principle and their ability to put this knowledge into practical advice. The questions were developed in form of case scenarios in a direct patient care setting taking into account the practice need and competency of entry-level pharmacists. Students also received feedback about their answers to support their learning and professional development. An informal discussion was involved in which students share their thinking about their learning experience and the preference to learn more about nutrition.

Results: Students performed significantly better on the question that address general nutritional advice and questions pertaining to healthy pregnancy and breastfeeding, but not on questions that require clinical application specifically in cardiovascular cases. About 75% of the cohort agreed that they would like to learn more about nutrition.

Conclusion: Because of an increasing emphasis on prevention of chronic disease development, students must be able to identify and assess dietary risk factors associated with the development of these illnesses. Moreover, students need to acquire and develop motivational counselling and referral abilities. Our results suggest the need for a multidisciplinary educational initiative to develop nutrition education competencies and curricula for pharmacy program considering best practices and patients outcomes. The inclusion of nutrition in students’ training at all levels is necessary to maintain a focus on its critical role in patient care.
APPLICANT PREFERENCING OF TRAINING PROGRAMMES IN THE NATIONAL PRE-REGISTRATION PHARMACIST RECRUITMENT SCHEME FOR ENGLAND AND WALES: APPLICANT BEHAVIOUR AND ASSOCIATED FACTORS IN THEIR DECISION MAKING

Laura McEwen-Smith, Gail Fleming, Tim Swanwick, Christine Hirsch, Sharon Buckley, Asma Yahyouche, Jonathan Ward, Malcolm James Price, Vibhu Paudyal

Health Education England  Royal Pharmaceutical Society  University of Birmingham

Objective
A centralised system for recruiting to all hospital preregistration pharmacist training and majority of community pharmacy posts based in England and Wales was introduced in 2017. Applicants submit a single application and are allocated their highest preferred training place, based on their performance in selection centres. This evaluation explored applicant preferencing of their future employers and factors influencing their behaviour.

Design
The study was undertaken in three phases:
- Preferencing data from all applicants (n=2694) of the 2017 national recruitment cycle were analysed
- A cross-sectional online survey of all students in England and Wales undertaking Master of Pharmacy Year 4 who were eligible applicants of the 2017 application cycle
- Survey was followed by qualitative focus groups and telephone interviews

Data collection tools designed based on literature, theoretical domains framework (TDF) and expert opinion of evaluation steering committee. Descriptive and inferential analysis of quantitative data was undertaken. The framework technique was used to analyse the qualitative data.

Results
The majority (n=2325, 86%) of applicants preferenced pre-registration programmes across both hospitals and community pharmacy sectors. A total of 283 (11%) and 86 (3%) applicants respectively only preferenced pre-registration programmes in either hospital or community pharmacy sectors respectively. 2182 (83.9%) applicants ranked hospital pre-registration programmes as their first ranked preference. London was the most popular geographical area with approximately 4 in 5 applicants preferencing at least one programme. Ethnic variations as well as differences across applicants from different Schools of Pharmacy were identified. A total of 307 responses were received from the survey (response rate 11%). A third expressed dissatisfaction with the preferencing process. Participants indicated high satisfaction with the provision of information about preferencing at presentations and events runs by the Universities and HEE.

Conclusions
This evaluation has demonstrated a high affinity of pharmacy students for pre-registration pharmacist training programmes in hospitals. Long term career aspirations were very important as were favoured geographical areas. These findings highlight the need for community pharmacy employers to enhance their marketing strategies including the quality of information available to students about their programmes. The preferencing process itself can be improved by widening the timeframe and improving information on the geographical location of training places.
INTRODUCTION
Peer-assisted learning (PAL) focuses on facilitating learning. Students in the same subject learn together with their peers, facilitated by trained student facilitators in the year above. A pilot PAL scheme was introduced at Reading School of Pharmacy.

OBJECTIVE
To describe the implementation and evaluation of a peer-assisted learning (PAL) pilot scheme at a pharmacy school in the UK.

DESIGN
Pharmacy academics and the PAL co-ordinator designed and implemented the pilot scheme in pharmacy.

The PAL co-ordinator trained PAL leaders (see Figure 1).

METHOD
Evaluation included questionnaires and one-to-one interviews with PAL learners and a focus group with PAL leaders.

RESULTS

Learners
- Fun and interactive; encouraged collaborative learning
- Less formal and provided a relaxed atmosphere
- Increased confidence to ask questions (basic and complex concepts) and reduced pressure to answer correctly
- Increased understanding of subject area
- Some were less comfortable with the less structured format

Leaders
- A “milestone” in their personal development and a valuable addition to their curriculum vitae
- Additional skills and experiences gained/enhanced: leadership, teamwork, facilitation, inter-personal relations and communication
- Consolidated own learning

FUTURE WORK
Additional subject-specific support and learning from past PAL leaders.

CONCLUSION
- The successful pilot provides an evidence base for future implementation of the scheme.
- There is scope to extend the topic areas covered within PAL.
- PAL provided a different and innovative approach to teaching and learning; students and academics assume different ‘roles’ and this model showed benefits in a pilot PAL scheme in pharmacy.

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ESTABLISHMENT OF A WORKPLACE-BASED EXPERIENTIAL CLINICAL PHARMACY TRAINING PROGRAM IN AUSTRALIA FOR CHINESE PHARMACISTS

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Introduction
China’s Ministry of Health has implemented healthcare reforms mandating clinical pharmacy services be integrated into hospitals. This has resulted in increased demand for Chinese pharmacists with knowledge and skills to deliver clinical pharmacy services at a patient facing and operational level.

Objective
To establish a clinical pharmacy training program for Chinese pharmacists at Monash Health, a tertiary referral metropolitan teaching hospital in Melbourne, Australia, in collaboration with the Chinese Pharmaceutical Association.

Program Design

Participants
Three Chinese registered pharmacists working in hospital practice in China completed the 24 week structured clinical pharmacy training program (Figure 1) in 2017-2018.

Activities and assessments
- Program handbook and pre-reading provided prior to program commencement
- shpaclinCAT self-assessment at weeks 4 and 12 and supervisor-assessment at week 12
- Education tools for ongoing assessment and feedback including checklists, rubrics, mini-Clinical Examination (Mini-CEX) and case-based discussion tools.

Program evaluation
- Anonymous surveys about experiences with the training program at weeks 4, 12 and 24
- Learner to supervising pharmacist clinical teaching questionnaires.

The program aligned with International Pharmaceutical Federation Workforce Development Goal 7 - Service provision and workforce education and training.

Results
The clinical pharmacy training program resulted in positive outcomes for both participants and supervisors, with participants applying learning at their workplaces in China (Figure 2). Improvements have been made for future program delivery.

Conclusion
Workplace-based experiential training in Australia exposed Chinese pharmacists to established and well-developed clinical pharmacy and clinical education services. After completion of the training program, Chinese pharmacists have generalised and applied learning to the hospital pharmacy setting in China.

Figure 1: Training program structure

Figure 2: Examples of program outcomes implemented in China
Can implementing a feedback framework lead to improved written reflections by pharmacy interns?

Brindha Kshirsagar¹, Michelle Vienet¹, Conan MacDougall², Elizabeth Morabito¹, Laura Dean¹, Tina Brock¹
¹Monash University, Faculty of Pharmacy and Pharmaceutical Sciences; ²University of California, San Francisco

Background

The Pharmacy Board of Australia:
• Requires pharmacists and pharmacy interns to complete continuing professional development (CPD) to maintain competence in practice
• States that activities involving self-reflection can be included as CPD for pharmacy interns

The Monash pharmacy intern training program (ITP) requires interns to complete reflections on each CPD activity.

Objective

To evaluate the feasibility and effectiveness of tutors providing targeted formative feedback using a structured framework for CPD reflections written by pharmacy interns.

Method

• Pilot study
• Convenience sample and all samples randomised
• Inclusion criteria
  • Monash ITP intern commencing in semester 1, 2018
  • Learning portfolio tutors with ≥1 year tutor experience
• Exclusion criteria
  • Monash ITP mid-year intake interns
  • Learning portfolio tutors with <1 year tutor experience
  • Learning portfolio tutors who served as skills coaches in the undergraduate program

Results

<table>
<thead>
<tr>
<th>Feasibility for tutors</th>
<th>Outcome Value Across All Measurements mean (SD, n)</th>
<th>Outcome by Sequence Slope of Time Spent vs Reflection Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Comp Group I Group p-value Comp Group I Group vs no change vs no change p-value for differences in slopes</td>
<td></td>
</tr>
<tr>
<td>Time spent on reflection (minutes)</td>
<td>7.46 (2.68, 193) 11.1 (4.7, 98)</td>
<td>&lt;0.001 1 -0.03 (p=0.86) -0.65 (p&lt;0.001)</td>
</tr>
</tbody>
</table>

Impact on reflective abilities of pharmacy interns

As more reflections were written, intervention group interns significantly improved in their reflective abilities compared to those in the control (P=0.04) and comparator groups (P=0.001).

Experiences and perceptions, interns

83% Agreed or strongly agreed
• Feedback was organised in a way that helped me take action.

87% Agreed or strongly agreed
• Feedback assisted me to think more deeply about areas I need to develop.

85% Agreed or strongly agreed
• Feedback allowed me to become more aware of my growth and development as a pharmacist.

85% Agreed or strongly agreed
• The way feedback was organised helped me set clear goals to address my knowledge gaps.

Conclusion

Feasibility: Intervention group tutors became more efficient at providing feedback over time.

Structured feedback: Led to significantly improved pharmacy intern CPD reflections over time.

Perceptions: Of both tutors and pharmacy interns were positive overall, indicating that implementation of structured feedback would be feasible.
Assessment of Jordanian student competence in Medication Reconciliation Simulation.

Rebekah J Moles¹, Betty Chaar¹, Iman Basheti², Dalia Bajis¹.
1. University of Sydney, Australia. 2. Applied Science Private University, Jordan

**Background:** Taking the Best Possible Medication History (BPMH) has been described as an Entrustable Professional Activity (EPA) for Pharmacy students. The BPMH is also the first crucial step in performing medication reconciliation to ensure a patient is prescribed and administered the correct medicines. Students should be assessed on their competence to perform this EPA in the classroom to prepare them for clinical practice.

**Objective:** To investigate the impact of a medication reconciliation course utilising in-classroom simulation, observation and immediate feedback on students’ performance over time, as well as changes in the self-perceived confidence and competence.

**Design:** In 2016, over a three-day course, fourth- and fifth-year pharmacy students from ASU were assessed by roleplay on their BPMH taking and reconciliation skills. Students received immediate feedback after assessment, and observed peers undergo the assessment process. Comparison of student scores (one-way ANOVA) was performed to detect differences in scores across the 3 days. Pre- and post-simulation questionnaires and focus groups enabled collection of quantitative and qualitative data pertaining to student self-perceived confidence and competence (paired t-tests), perceptions, experiences and usefulness of the course (qualitative).

**Results:** Assessment-based competence scores demonstrated significant improvement in student performance between day 1 and day 2 (p<0.001) and day 1 and day 3 (p<001) (See Table). Self-perceived confidence and competence scores also significantly improved after the intervention (3.9 v 4.46; P<0.001), (P<0.05) respectively. Focus group analysis yielded positive responses, such as: students valued receiving feedback on performance.

**Conclusion:** Simulation with feedback was a useful tool to teach pharmacy students medication reconciliation skills in Jordan.

<table>
<thead>
<tr>
<th>Day of Assessment</th>
<th>Number of Students Assessed</th>
<th>Number of Students with Satisfactory Score (%)</th>
<th>Mean Score</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>36</td>
<td>27 (75%)</td>
<td>26.1</td>
<td>7.7</td>
</tr>
<tr>
<td>Day 2</td>
<td>31</td>
<td>30 (97%)</td>
<td>32.7</td>
<td>6.2</td>
</tr>
<tr>
<td>Day 3</td>
<td>28</td>
<td>26 (93%)</td>
<td>33.8</td>
<td>5.2</td>
</tr>
<tr>
<td>Total</td>
<td>95</td>
<td>83 (87%)</td>
<td>30.5</td>
<td>7.4</td>
</tr>
</tbody>
</table>
AN EVALUATION OF PHARMACEUTICAL WORKFORCE AND PHARMACY EDUCATION USING THE FIP’S WORKFORCE DEVELOPMENT GOALS: A CASE FROM QATAR

Banan Mukhalalati¹, Meram Ibrahim¹, Ahmed Awaisu¹
¹College of Pharmacy, Qatar University, PO Box 2713, Doha, Qatar

1 Introduction

- WHO estimates a healthcare workforce shortage of 12.9 million by 2030, which constrains the achievement of Sustainable Development Goals
- Several reports on the pharmacy workforce published by FIP indicates shortages of pharmacists in all sectors
- Data regarding the Eastern Mediterranean Region (EMR) highlights a disconnection between education, regulations, and practice
- Available literature in Qatar did not discuss workforce intelligence in terms of capacity planning and development

2 Research Objectives

- Conduct a self-assessment of pharmacy education and workforce in Qatar in relation to the FIP’s Pharmaceutical Workforce Development Goals (PWDGs)
- Prioritize the identified gaps
- Recommend potential solutions to address them

3 Methods

Conventional Delphi Technique

Round one Self-assessment tool sent to participants by email seeking individualized responses

Round two Group meeting with participants to reach consensus on responses

Round three Confirmatory round through email to participants

4 Results

The Academy Cluster
- CPH is expanding its capacity, but not based on national needs
- Quality assurance tasks are carried out yearly
- Stakeholders are not involved in policy development

The Professional Development Cluster
- There is no common understanding of specialization and advanced practice
- Lack of competency framework ladder

The System Cluster
- Lack of workforce policy intelligence
- Lack of workforce policy

Identified Gaps from each Cluster

5 Conclusions

- PWDGs are interrelated and a gap in one goal can negatively influence other goals
- Increasing the educational capacity based on national needs, (PWDG 1) in the academy cluster, cannot be achieved without workforce intelligence and workforce planning, (PWDG 12) in the systems cluster
- Lacking a competency framework, (PWDG 5) in the professional development cluster, has negatively impacted other professional development goals, leadership development (PWDG 6) and the advanced and specialists expert development goal (PWDG 4)
- Countries in the EMR should ideally collaborate in initiating regional workforce transformation strategies
A systematic review to investigate the impact of integrated curriculum on undergraduate healthcare students

H. Nazar, A. Khan, A. Husband

**Objectives:** Integrated curricula is being adopted within healthcare programmes with a growing number of curriculum evaluations being undertaken and reported. A framework exists to guide educationalists in the planning, design and implementation of integrated curricula. This study presents a systematic appraisal of the evidence on how healthcare students experience and perform within integrated interventions. Six electronic databases: Medline, Embase, Scopus, Psych-INFO, CINHAL and ProQuest were systematically searched in September 2018. Studies reporting on undergraduate healthcare students providing feedback, or performing at an assessment after experiencing integrated curricula were included. Studies were assessed for methodological quality and risk of bias using the Joanna Briggs Institute critical appraisal checklist. Studies were appraised against the implementation framework to facilitate contextual understanding of the intervention and findings.

**Findings:** Forty studies from programmes in medicine, pharmacy and dentistry worldwide met the inclusion criteria and were included (Fig 1). Interdisciplinary level integration was the most widely adopted, with a wide range of teaching and learning strategies employed in the delivery. Students appear to perform similarly or conservatively better after experiencing integrated education, however adopted study designs preclude the deduction of a direct causal relationship. Students report generally positive feedback on their integrated experiences, claiming the development of a wide range of skills. However, authors provide insufficient detail about the integrated educational developments to best inform future educationalists on the best systems for curriculum integration.

**Summary:** There is an impetus in research purporting best practices in curriculum integration, however, more standardised, evidence-informed design and reporting of interventions and their outcomes are required to strengthen evidence in this area.
BACKGROUND:
• Approximately two thirds of all US Schools and Colleges of Pharmacy offer an international Advanced Pharmacy Practice Experience (APPE). Despite growing global education offerings, little is known about the learning outcomes gained from these experiences.
• The Consortium of Universities for Global Health (CUGH) developed an interprofessional global health competency framework that highlights “global citizen” competencies, basic abilities, knowledge and attitudes obtained by all health professionals training in global health.

PURPOSE: Develop a model to contextualize global health learning for student pharmacists completing international APPEs.

DESIGN:
• Students from University of North Carolina at Chapel Hill, Purdue University, and the University of Colorado completed a retrospective pre-post survey evaluating self-perceived CUGH competency growth and answered open-ended questions about knowledge, skills, and attitudes after completion of an international APPE.
• Students were invited to participate in a focus group.
• Qualitative data from the survey and focus groups was coded in a two-cycle open coding process by investigators.
• Code mapping and analytic memo writing from the qualitative analysis were analyzed to derive to a model.

RESULTS:
• All 81 international APPE participants completed the open-ended survey items and 22 participated in the focus group discussions.
• The Global Health Experience Learning Progression (GHELP) model was derived to help explain the process of student learning while on global health experiences.
  o Progression model with three constructs
  o Triggers include cultural and patient care differences
  o Progress from cultural awareness → appreciation → sensitivity
  o Application to local practice

CONCLUSION: The Universities plan to utilize this model as part of pre-departure training to help student pharmacists better prepare for and conceptualize their global health experience. The GHELP model needs to be further validated to determine whether student learning progresses as outlined and whether students apply their learning back into a local context. Additional research is also necessary to determine if the model can be applied to trainees in other healthcare disciplines.

Figure 1: Global Health Experience Learning Progression (GHELP) Model

EXPLORING THE INTERACTIONS OF HOSPITAL PHARMACISTS WITH OTHER HEALTH CARE PROFESSIONALS TO INFORM INTERPROFESSIONAL EDUCATION

Mathew W Smith, Andrew I Jenkins, Efi Mantzourani, (Mary) Louise Hughes
Cardiff School of Pharmacy & Pharmaceutical Sciences

Introduction

Interprofessional teamwork, when effective, supports the delivery of quality outcomes for patients. Hospitals provide a unique opportunity for interprofessional teamwork given the range of healthcare practitioners (HCPs) that work in the setting. Nevertheless, a number of reports have indicated that interprofessional teamwork is sometimes suboptimal. Interprofessional education (IPE), embedded in UK Master of Pharmacy programmes, is an effective tool to prevent professional siloing (Parsell and Bligh 1998). Our objective was to understand interactions between hospital pharmacists and other healthcare practitioners in order to develop effective undergraduate IPE.

Aim & Method

The aim of this current work was to understand the interprofessional interactions that take place between hospital pharmacists and other HCPs. Purposive, snowball sampling was used to recruit hospital pharmacists. Semi-structured interviews were conducted with participants. Inductive thematic analysis was used to develop themes from the data. Deductive, conceptual, content analysis was used to identify the frequency of interactions, the mechanisms by which they took place (e.g. face-to-face, telephone etc) and the reason for engaging in the interaction.

15 Hospital based pharmacists were interviewed in total — nine participants reported that their most frequent interprofessional interaction were with doctors, whilst the remaining six indicated their most frequent interactions were with nurses. Physiotherapists and dieticians were also reported as healthcare professionals with which pharmacists had frequent interprofessional interactions.

The mechanism of interaction with healthcare professionals was largely reported to be via face-to-face conversations or by the telephone although some participants indicated that written notes were appropriate in some circumstances.

Inductive results inductive thematic analysis revealed 4 main themes as well as multiple subthemes within each of these.

The four main themes are shown below:
1. Perceived benefits of interprofessional interactions
2. Perceived barriers to interprofessional interactions
3. Perceived facilitators to interprofessional interactions
4. Impact of doctors’ seniority on interactions

Results

Deductive results The table below indicates the nature of the queries (clinical & practical) that interviewees discussed with other select HCPs in the course of their practice.

<table>
<thead>
<tr>
<th>Healthcare Professional</th>
<th>Clinical queries (top 3 shown)</th>
<th>Practical queries (top 3 shown)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital Doctor (n=15)</td>
<td>Medication appropriateness (n=7) Dose appropriateness (n=7) Patient discharge (n=7)</td>
<td>Medication stock / supply (n=3) Clinical Governance (n=3)</td>
</tr>
<tr>
<td>Hospital Nurse (n=15)</td>
<td>Medication administration (n=15) Patient information (n=12) Medication information &amp; advice (n=5)</td>
<td>Patient discharge (n=9) Medication stock / supply (n=7) Arranging bloods to be done (n=6)</td>
</tr>
<tr>
<td>Dietician (n=15)</td>
<td>Total Parenteral Nutrition (n=13) Mineral / Electrolytes (n=6) Tailoring diet / medicine (n=5)</td>
<td>NG/PEG tubes (n=6) Dietary medication stock / supply (n=3) Passing info to doctor (n=1)</td>
</tr>
<tr>
<td>General Practitioner (GP) (n=14)</td>
<td>Medicines reconciliation (n=6) Relaying information on discharge (n=4) Medicines information queries (n=3)</td>
<td>Administrative role between GP and HCP (n=1)</td>
</tr>
</tbody>
</table>

Discussion

This study has highlighted the HCPs that hospital pharmacists predominantly interact with and the nature of those interactions. This information can be used to design meaningful IPE for pharmacy students with the most appropriate colleagues that is based on authentic scenarios.