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Monash Pharmacy Education Symposium 2017

Venue: Monash University Prato Centre, Via Pugliesi, 26, 59100 Prato, Italy

Teaching Innovation Oral Presentations

Stream 1A: Teaching Innovation (Monday): Advancing pharmacy using social sciences

TIO1. The Stakeholder Experience of a large scale final year undergraduate social community research project

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Keywords: Research Methods Courses, Supervision, Social Science methodology, Social Science Research, Supervisory methods

Objective: In 2014 The School of Pharmacy at the University of Nottingham needed to deliver individual research methods supervision by a small number of academic staff to a large number of final year students. There are limited opportunities for students to gain patient facing experience on this course. The learning initiative was designed to meet these needs.

Design: Dissertation students were offered a unique opportunity to participate in a large scale community pharmacy research project. Eighty-two students collected standardised data from patients across 36 pharmacies in the Greater Nottingham area. Local data collection supervision was provided by the local community pharmacists at the data collection sites. Academic supervision was provided to students using a hub and spoke model with 'hub' supervision provided by two members of staff offering broad methodological support to the cohort. This was further supported by local supervisors providing individualised 'spoke' support to students. Students were able to examine and report on their local results. The data generated overall provides a mass dataset for further examination by academics. An independent evaluation of stakeholder experience was undertaken.

Assessment: Students were assessed by a poster presentation and written report summarising one segment of local analysis.

Conclusion: Academics saw the hub and spoke model of supervision as innovative and a positive and efficient use of their time. All participating stakeholders feel that students benefit from the timely development of their transferable skills for their professional career; skills cited as requirements for pharmacy education by the GPhC (2011).

References

GPhC. (2011). Future pharmacists: Standards for the initial education and training of pharmacists. May 2011.

TIO2. Using social media and focused learning activities to impact development of empathy skills

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Keywords: Pharmaceutical Education, Science Laboratories, Empathy, Social Media, Reflection

Objective: To assess how incorporation of social media and empathy-focused activities in a skills laboratory (lab) impacts third-year pharmacy students' self-efficacy scores and self-reflections. Lab activities were completed emphasising social media to further develop students' awareness, empathy, and communication skills.

Design: Students completed an initial-survey assessing baseline empathy (Toronto Questionnaire) and self-efficacy (10 Self-Efficacy questions). Developmental activities included following a story via social media and writing personal reflections. Students were re-assessed at semester's end with a post-survey including the original empathy and self-efficacy questions.

Assessment: Survey data was analysed for 138 students who consented for both data sets. The Toronto Questionnaire overall mean decreased, while the sum of the 10 Self-Efficacy questions increased (Table I). When analysed separately, four questions increased in score, and two had a significant increase. Self-reflections were reviewed and contained statements of growth.

Conclusion: Although challenging to teach and assess empathy, social media was used as an avenue to develop these skills. While quantitative data did not show significant improvement in overall empathy and self-efficacy scores, itemised data points demonstrated increased self-efficacy. Lack of significance may result from limitations including but not limited to, short intervention period, understandably varying baseline scores, and students' self-realisation of their comfort levels. Qualitative data provided evidence of positive impact through student reflection.

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Table I: Pre-Post Survey Results

Toronto Questionnaire[14]	**Pre-average**	**Post-average**	**Difference**	***p*-value**
Total	47.2	46.1	- 1.10	**0.012**
Self-Efficacy Questionnaire	**Pre-average**	**Post-average**	**Difference**	***p*-value**
Total	72.5	73.0	+0.52	0.603
1 - Identify patients' emotions	7.43	7.37	-0.06	0.627
2 - Recognise nonverbal cues indicative of a patient's emotional state	7.30	7.30	0.00	1.000
3 - Understand concerns of a patient	7.60	7.47	-0.13	0.329
4 - See a situation from the patient's point of view	7.26	7.11	-0.15	0.354
5 - Communicate my understanding of patients' concerns	6.85	6.88	+0.03	0.839
6 - Address patients' concerns	7.26	7.24	-0.02	0.876
7 - Use empathy in my interaction with a patient	7.69	7.43	-0.26	0.089
8 - Develop the best individualised treatment plan taking into account the whole patient	7.20	7.56	+0.36	**0.005**
9 - Respond to patient questions and/or concerns about a topic requiring empathy	7.04	7.42	+0.38	**0.008**
10 - Improve patient outcomes with the use of empathy	7.10	7.23	+0.13	0.345
Selected Self-Confidence Questions	**Pre-average**	**Post-average**	**Difference**	***p*-value**
I feel comfortable talking to someone who has received a poor prognosis.	55.8%	61.6%	+5.8%	0.195
Does hearing someone's personal medical story effect how you relate?	89.9%	95.7%	+5.8	0.074

Paired response n=138; *p*-value calculated using student paired *t*-test; bold results indicate significance

TIO3. "Socialisation Internships": Novel pharmacy student placements in London

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Keywords: Empathy, Resilience, Socialisation

Background: The Royal Pharmaceutical Society (2013) states that pharmacists should understand the patient experience. However, timetabling and site availability limit appropriate educational opportunities for pharmacy undergraduates.

Objective: To provide students with experience to develop empathy (Jubraj *et al.*, 2016), relationship-building skills, resilience and appropriate work ethic (General Pharmaceutical Council [GPhC], 2011).

Design: 1. Local charities identified to provide socialisation experience; 2. Learning outcomes/minimum hours/training needs agreed; 3. Quality assurance mechanisms established; 4. Students given list of charities to contact to arrange placements; 5. Student briefing and debriefing sessions designed and delivered.

Assessment: Thirty minute group portfolio review requiring: • 30 hours' verified attendance • Learning outcomes evidence • Three supervisor feedback forms

Conclusion: Initial student concerns about workload were significantly outweighed by their positive feedback about the value of the experience. A positive impact on other course aspects has been noted *e.g.* actor feedback on students' manner in consultation skills workshops. Charities' feedback was positive with some nominating students for awards.

References

Royal Pharmaceutical Society. (2013). Medicines Optimisation: Helping patients to make the most of medicines. May 2013.

Jubraj, B. *et al*. (2016). Why we should understand the patient experience: clinical empathy and medicines optimisation. *The International Journal of Pharmacy Practice*, **10**.1111/ijpp.12268

GPhC. (2011). Future pharmacists: Standards for the initial education and training of pharmacists. May 2011.

TIO4. Creation and evaluation of an immersive learning setting for undergraduate pharmacy students "Pharmacy Live"

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Keywords: Integrated Learning Systems, Professionalism, Pharmacy, Pharmaceutical Education

Objective: Immersive learning techniques aim to assist the practical application of subject knowledge. Vital integration of learning is done in the mind of the student (Harden, 2000). "Pharmacy Live" was developed at University College London in partnership with Green Light Pharmacy to encourage learning in a professional setting, to consolidate integrated subject understanding and develop professional skills.

Design: Typical student activities for Year 4 students in four two-hour sessions in the pharmacy included handing out prescription medicines to patients with adherence support "Very Brief Interventions" and minor ailments advice. These took place in groups of three, supervised by

one pharmacist facilitator. All students had an opportunity to be actively involved in pharmacy activities during the session.

Assessment: Feedback from the 193 final year students (collected by means of before and after paper questionnaires) indicated that "confidence in providing health promotion" increased (from 36% to 64% agreement) and the feeling that they "knew enough to talk to patients about health promotion" also increased (from 19% to 56% agreement). Overall student satisfaction with their experience was very high and they agreed that it helped integrate their subject knowledge from across the degree.

Conclusion: These outcomes (and a majority of the others identified in the questionnaire responses) demonstrate a greater degree of preparedness in students for their pharmacist role.

Reference

Harden, R.M. (2000). The integration ladder: a tool for curriculum planning and evaluation. *Medical Education*, **34**, 551-557.

Stream 1B: Teaching Innovation (Monday): Meeting diverse education needs with innovative solutions

TIO5. Evaluation of a pilot joint undergraduate pharmacy and medical student hospital ward training experience

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Keywords: Pharmaceutical Education, Professional Education, Inter-professional Relationship

Objective: The University of East Anglia hosts both medical and pharmacy degrees which provide different learning experiences that may be complementary. A pilot programme was developed to test the effects of joint hospital ward training in terms of educational utility and acceptability to medical and pharmacy students.

Design: All 4th year pharmacy students were invited to participate in the pilot of which the first 14 expressing an interest joined; 3rd and 4th year medical students were allocated to the pilot. The training comprised a joint two-hour hospital ward-based placement followed by a joint case presentation to a medical and pharmacy tutor. Anonymous feedback was sought from participating students using a 14 statement survey; extent of agreement ranged from 1 as strongly agree through to 5 as strongly disagree. A lower score indicated a more positive opinion of the pilot programme. Mann Whitney U analysis was used to investigate any differences between medical and pharmacy student responses.

Assessment: Table I summarises the median (IQR) responses from 13 medical students and 14 pharmacy students. The pilot was deemed effective for developing the soft skills of team working, respect, sharing, and inter-professional working. Pharmacy students were more positive towards the experience than medical students. Pharmacy students were significantly more likely to report the experience as relevant to their future professional role and effective for learning practical clinical skills.

Conclusion: Both pharmacy and medical students found the joint teaching to be a positive experience. The greater relevance and clinical skills development reported by pharmacy students may be due to them having less exposure to patients and ward-based experience relative to their medical counterparts.

Table I: Joint pharmacy and medicine placement student feedback scores

Statement	1 Enjoyed	2 Stressful*	3 Advance guidance	4 Team working	5 Respect	6 Sharing	7 Relevant
Medical student	1 (, 2)	3 (1, 4)	2 (1, 2)	2 (1, 2)	1 (1, 2)	1 (1, 3)	3 (2, 4)
Pharmacy student	1 (1, 2)	3 (3, 3 3)	3 (2, 4)	1 (1, 2)	1 (1, 2)	2 (1, 3 3)	1 5 (1, 2)
MWU p	>0 05	>0 05	>0 05	>0 05	>0 05	>0 05	**0.006**
Statement	**8 Confidence**	**9 Effective for clinical training**	**10 Role knowledge**	**11 Effective for Inter-professional working**	**12 Effective for team working skills**	**13 Tutors**	**14 Ward staff**
Medical student	2 (2, 4)	2 (1, 3)	2 (1, 2)	1 (1, 2)	1 (1, 2)	1 (1, 2)	3 (2, 3)
Pharmacy student	2 (1, 2)	1 (1, 1 3)	1 (1, 2)	1 (1, 2)	1 (1, 1 3)	1 (1, 2)	2 (1, 3)
MWU p	>0 05	**0.03**	>0 05	>0 05	>0 05	>0 05	>0 05

*Adjusted reverse score

TIO6. Sustainable Pharmacy: Piloting a brief curriculum surrounding pharmaceuticals, climate change, and sustainability within a U.S. pharmacy programme

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Keywords: Sustainability, Educational Opportunities, Climate Change, Pharmaceutical Education

Objective: From drug development to disposal, the impact of pharmaceuticals on the environment is evident. As policies surrounding climate change develop globally, pharmacists must display competence and promote action to reduce the effects of healthcare systems on the environment. Therefore, we implemented a brief curriculum for pharmacy students incorporating sustainability, climate change, and pharmaceuticals.

Design: One hundred and fifteen students at the University of California, San Francisco School of Pharmacy participated during their required 3rd year Health Policy course. The curriculum (approximately

three hours) included guided pre-course activities, an interactive lecture, a panel of experts discussing complex decision-making, and small-group case-based problem solving. We conducted curricular assessment through pre-/post-test measures of knowledge acquisition. We also collected student feedback and recorded observed behaviours.

Assessment: Of the 102 respondents, questions addressing drug disposal legislation and the predicted effects of climate change on health showed a significant increase in knowledge (*Z* scores 3.09 and 5.45, respectively). The session was also well-received; average student evaluation scores were above 4 in all areas of course/instructor evaluation (where 5=ideal). In addition, five student groups (increased from 0 in 2015) proposed a sustainability-related policy as part of their final coursework.

Conclusion: Pharmacy curricula addressing the interaction between climate change and pharmaceuticals are pertinent, yet lacking within the United States (U.S.). The development and implementation of this brief curriculum resulted in knowledge enhancement and favourable student response. This project is feasible for other U.S. Schools of Pharmacy and our materials have been shared on PharmAcademy.org.

TIO7. Evaluating suitability of students in the internationally-trained Pharm.D (ITPD) degree programme

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Keywords: International Education, Admission Criteria, Programme Evaluation, Pharmacy

Objective: To evaluate the suitability of students in the ITPD degree programme based on performance in didactic and experiential coursework in the ITPD curriculum.

Design: The University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences (CUSSPPS) created the hybrid ITPD pathway within the School's ACPE-accredited Pharm.D programme for international pharmacists. The ITPD programme enrolled the inaugural class in 2014 with three students. The class size increased to five students in 2015 and six students in 2016. To evaluate suitability of students, admissions criteria (written essay, English proficiency evaluations and competency exams) and demographics (duration and setting of pharmacy practice and previous degrees) are compared to student performance in didactic and experiential courses. ITPD student performance is also compared to students in other Pharm.D pathways [entry-level Pharm.D (ELPD) and North American-Trained Pharm.D (NTPD)] at CUSSPPS.

Assessment: ITPD student performance (GPA) in the curriculum the was compared to the ELPD and NTPD student performance in live courses (ITPD 3.8, ELPD 3.6), online courses (ITPD 3.43, NTPD 3.41), pharmacotherapy courses (ITPD 3.33, NTPD 3.17, ELPD 3.05), and advanced experiential courses (ITPD 3.25, ELPD 3.89). Admissions data was assessed for predictors of success. Competency exam scores correlate with mean GPA ($r=0.72$, $p<0.05$) and mean GPA in pharmacotherapy courses ($r=0.81$, $p<0.05$).

Conclusion: ITPD students are performing well to date. Evaluating admissions criteria versus student performance in didactic and experiential course work of the ITPD curriculum allows for ongoing improvements in our admissions process.

TIO8. Assessment of intercultural learning in a global health student experience

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Keywords: Intercultural Education, Global Health, Study Abroad

Objective: Through the years that Purdue University College of Pharmacy students have participated in the Global Health Advanced Pharmacy Practice Experience (APPE) in Kenya, there has been a challenge in assessing intercultural growth. The objective of this project was to assess students' intercultural growth by participation in a cultural immersion APPE using the Intercultural Development Inventory (IDI).

Design: Student pharmacists participating in the Global Health APPE are enrolled in a pre-requisite didactic course the spring semester of their 3rd professional year then spend eight weeks during their 4th professional year in Eldoret, Kenya. During the didactic course, participants learn about common disease states, cultural norms and travel tips to help prepare them for active engagement once on the ground.

Assessment: This past year, students completed the IDI survey at the beginning of the pre-requisite course then again at least four weeks after completing their APPE and returning to the United States (U.S.).

Conclusion: It was noted that cultural immersion did have an impact on several students. However, the noted growth is in line with an experience the students could have had without traveling abroad. The goal of the APPE is to have greater growth so future plans include partnering targeted reflection and individualised intercultural learning activities throughout the pre-requisite course and APPE to enhance the intercultural growth of all students.

Stream 2A: Teaching Innovation (Tuesday): Embedding experiential learning for better patient outcomes

TIO9. A Novel Intersession Course during the Final Experiential Year of a Doctor of Pharmacy Curriculum

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Keywords: Learning Strategies, Curriculum Evaluation, Course Organisation, Curriculum Based Assessment

Objective: To provide a novel culminating experience that evaluates student achievement of five curricular outcomes during the final year.

Design: This two-week course provided faculty assessment of student competence after completing five of seven six-week experiential rotations. Students completed written pre-work assignments generated from these rotations. Faculty assessed and provided feedback to improve students' competency on curricular outcomes related to four course components: Clinical Case, Drug Information, Clinical Pearl and Reflection (Table I). Students verbally presented to faculty and peers for additional assessment during this course.

Assessment: One hundred and forty-five of 149 (97%) students demonstrated achievement of outcomes and competency; four required remediation. Using the Kirkpatrick's Evaluation Model, Level 1 data (reaction) indicated 93% of students and 100% of faculty believed the course was valuable. Level 2 data (learning) revealed that 80% of students and 85% of faculty agreed/strongly agreed learning occurred. Level 3 data (behaviour) demonstrated increased student performance on assessments between pre-work and in-class components (p<0.001). Preliminary Level 4 data (results) indicated this course complemented learning from previous courses and met intended purpose.

Conclusion: This course successfully provided a near final evaluation of student competence. The novel aspect was the provision of structured faculty assessment during the final experiential year. The second offering of this course in 2017 incorporated modifications and revised remediation. This course received the 2016 AACP Teaching Innovations Award.

Reference:

Saseen, J., Blackmer, A., Thompson M. & Brunner J. (2016). Implementation of a Novel Intersession Course during the P4 Year. *American Journal of Pharmaceutical Education*, **80**(5), p121.

Table I: Curricular Outcomes and Associated Course Components

Curricular Outcome [theme]		Course Component
Conduct a patient-centred assessment	[assessment]	Clinical Case
Design, implement, evaluate and adjust a patient-centred pharmacy care plan	[plan]	Clinical Case
Retrieve, evaluate, and utilise professional and lay information in a critical and scientific manner that enhances the practice of pharmacy	[evidence based medicine]	Clinical Case, Drug Information, Clinical Pearl
Exhibit the highest standards of professional and ethical behaviour in pharmacy practice	[professionalism]	Clinical Case, Drug Information, Clinical Pearl, Reflection
Communicate effectively using multiple strategies to improve health outcomes	[communication]	Clinical Case, Drug Information, Clinical Pearl, Reflection

TIO10. Evaluation of undergraduate pharmacy students' learning experience in a GP setting

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Keywords: General Practice, Asthma, Patient Education

Objective: Pharmacists working in general practice teams, manage long-term conditions and provide advice on multiple medications. Pharmacy students had an opportunity to offer inhaler technique guidance to patients at a general practitioner's (GP) surgery. The arrangement was to encourage learning in a professional setting and measure the impact of students' guidance on patients' inhaler technique.

Design: Four final year pharmacy students, trained to use a Vitalograph AIM device, assessed inhaler technique of patients attending a respiratory clinic. Students worked in pairs and attended four clinics in total. Individualised corrective advice was provided, patients were retested and results recorded and forwarded to the duty respiratory nurse. Students were interviewed, one-to-one, following the experience.

Assessment: Twenty-three patients consented to participate. Good technique readings increased for metered dose inhaler users (from 4% to 23% of users) and dry powder inhaler users (from 25% to 50% of users). All students were initially daunted by the thought of talking to real patients and enjoyed the patient interaction. One student stated "*I found that it was easier to talk to a real patient...than a lecturer in a simulated session…it felt natural compared to an OSCE which is scripted rather*

than real". Another student stated "…*this experience has made me confident and prepared me for patient interaction. It has given me reassurance and it was rewarding*".

Conclusion: This learning opportunity worked well for pharmacy students, gaining experience working with patients and healthcare professionals. A positive impact on inhaler technique was observed following individualised advice. Students enjoyed and gained valuable experience from the opportunity. This demonstrates scope for more pharmacy students to practice and learn in GP settings.

TIO11. Develop and embed experiential placements throughout the UK pharmacy curriculum

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Keywords: Experiential Learning, Placement, Spiral Curriculum, Pharmacy, Communication Skills

Objective: To design, develop and evaluate a structured in-house hospital placement programme within the UK M.Pharm curriculum that aims to provide pharmacy students with opportunities to build practical skills in readiness for OSCEs and enable them to put the theory of pharmacy learnt in workshops into practice.

Design: Our hospital placement programme spans Year 1 to Year 3 of the M.Pharm curriculum and was designed using Miller's Triangle of Competence. Students are helped to develop their professional attitudes and competencies throughout the series of placements by exposing them to real patient situations increasing in complexity that demand the use of competent clinical, professional and communication skills. Our programme is based in one hospital near the University and is run in-house by a Teacher Practitioner Placement Lead and two placement tutors. This not only ensures high quality and standards for the placement but also provides a more standardised experience for all students.

Assessment: Students are required to write a reflection on each of the five visits, which is summatively assessed in Year 3 as part of their personal academic development portfolio. Students' consultation skills are formatively assessed by the teacher practitioners as well as their peers during the placements in preparation for summative assessments in OSCEs.

Conclusion: Overall, all students have found the placement experience positive and valued the opportunity to use their skills in real-life situations in this structured manner by in-house staff, indicating the worth of these placements for other Schools of Pharmacy.

TIO12. Inter-professional education as part of innovative group visit practice model for chronic pain patients

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Keywords: Inter-professional Relationship, Pain, Groups, Pharmacy, Medicine

Objective: To provide a learning activity that 1) offers students from different professions the opportunity to learn "about, from, and with each other" through applying their professional skills in a unique practice setting, and 2) facilitates learning through involvement of an innovative practice model for managing chronic pain patient' which require very complex care.

Design: Students from pharmacy, medicine and nutrition worked collaboratively in planning and participating in group visits under faculty supervision. Activities were developed collaboratively and roles were clearly defined by the students and implemented during the group visit. The group visit model (GVM) is an innovative healthcare delivery model with several key advantages over traditional care settings. First, the GVM allows for the comprehensive collaboration of an inter-professional (IP) team during each visit; secondly, this model allows connections to form among patients with chronic pain, improving social support and chance for peer learning. Third, each visit lasts two hours, providing additional time for self-care skill development and increasing provider efficiency.

Assessment: Qualitative student feedback from IP students supported increased understanding of each professions contribution to the team as well as enhanced comprehension of the GVM and tools for the management of pain. Pharmacy students "highly recommended" continuation of this activity and strongly supported the IP learning.

Conclusion: Engaging IP students in an innovative IP GVM facilitated IP learning as well as enhanced understanding about progressive strategies in managing chronic pain.

Stream 3A: Teaching Innovation (Wednesday): Collaborating across nations to improve practice

TIO13. An intensive clinical pharmacogenomics course for pharmacists in developing countries: the University of Colorado and Children's Cancer Hospital Egypt experience

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Keywords: Genetics, Pharmacy, Professional Continuing Education, Pharmaceutical Education, Developing Nations

Objective: Pharmacists are uniquely qualified to clinically apply pharmacogenomics. However, many pharmacists, particularly those in developing countries, have not received formal pharmacogenomics education. Our objective was to develop an intensive, practice-based, clinical pharmacogenomics course for pharmacists in Egypt.

Design: The University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences (CUSSPPS) and Children's Cancer Hospital Egypt (CCHE) partnered to develop a five-day, live course taught by a clinical pharmacogenomicist from CUSSPPS. The course consisted of 28.5 hours of ACPE-accredited, practice-based, continuing education and a certificate upon completion. The course consisted of 12 didactic lectures, ten case-based exercises, one journal club, and one clinical implementation activity. The programme targeted elements of the ASHP Statement on the Pharmacist's Role in Clinical Pharmacogenomics and consensus-based pharmacist-specific pharmacogenomic competencies.

Assessment: The course was offered January 2017 at CCHE. Ninety participants attended, the majority being practicing pharmacists. Knowledge was assessed via a 30 multiple-choice question pre- and post-test. Of participants who took both assessments (n=57), the pre-test mean ± SD (range) was 35.3% ± 20.5% (0-80%) and the post-test mean ± SD (range) was 87.1% ± 12.8% (50-100%), $p<0.0001$. 95.5% of participants rated "extent to which this course will change your way of thinking at your work setting" as excellent or good. 96.7% of participants reported they would recommend this course to colleagues.

Conclusion: Our international partnership highlights an effective strategy to rapidly educate pharmacists with practice-based pharmacogenomics knowledge. It also sets the stage for the launch of a Personalised Medication Management Service at CCHE.

TIO14. Pharmacy in development cooperation and disaster relief: a new course offered by Tuebingen University, Germany, and University of Malawi

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Keywords: Pharmaceutical Education, Developing Nations, Educational Innovation, International Programmes, Professional Continuing Education

Objective: To provide pharmacy students and pharmacists with knowledge and skills required for professional or voluntary work in pharmaceutical development cooperation and/or disaster relief.

Design: With funding from the German Federal Ministry of Education and Research, a new teaching module was established at the Pharmaceutical Institute of Tuebingen University, Germany. Academics and experts from different governmental and non-governmental organisations, active in pharmaceutical development cooperation and disaster relief, provided the theoretical background of this field. The course also included a laboratory practical on the detection of falsified medicines. Subsequently, students carried out independent projects on research questions provided by the involved organisations. Results of the projects were presented in a final session.

The German Federal Ministry of Economic Cooperation and Development, through the German Academic Exchange Service (DAAD), recently provided funding for a collaboration between the schools of pharmacy of Tuebingen University and the University of Malawi. Within this collaboration, academic staff from Malawi will contribute with their knowledge of the local pharmaceutical challenges to the teaching within the described course. German and Malawian students will cooperate in student research projects.

Assessment: This course was first implemented in 2016 and was highly overbooked. The course was recognised within the BSc. Pharm and MSc. Pharm curricula and within the Continuing Professional Education Programme for pharmacists. An evaluation by the participants showed very high satisfaction.

Conclusions: Education in this pharmaceutical field is in high demand from both students and practitioners, and can contribute to the formation of truly global pharmacists.

TIO15. Translating teaching into practice and impact on Sri Lankan healthcare

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Keywords: Educational methods, Health care, Impact evaluation, Peer acceptance

Objective: To describe the evolution of an undergraduate clinical pharmacy teaching and research program and report on the impact and acceptance of the introduction of clinical pharmacy practice in the Sri Lankan health system.

Design: An initial clinical pharmacy course as guest lecturers resulted in the collaborative development of a combined programme teaching B.Pharm students and training pharmacy educators supported by a World Health Organization grant. Studies at a large teaching hospital measured the gap in quality use of medicines (QUM) and included a controlled clinical trial of the impact of the clinical pharmacy service including its acceptance by medical staff.

Assessment: The undergraduate course has been delivered since 2009 and feedback from participants confirmed that visiting and up-skilled local pharmacists improve the quality of clinical pharmacy teaching. The gap in QUM study identified over 1250 opportunities for medicine optimisation in 478 patients. Results of the intervention study; in 400 patients in each arm, describe the positive impact on QUM and a high level of acceptance by practitioners in the current healthcare system.

Conclusion: This collaborative teaching and research programme provides an evidence base to inform: policy change, clinical pharmacy teaching and training and hospital practice models in Sri Lanka and other countries. The programme meets a number of FIP workforce development goals: working with International partners, building local academic capacity, developing structures for mentoring and support for local training; and generating evidence for the impact of a clinical pharmacy workforce on Sri Lankan health care.

Reference

Coombes I, Fernando G, Wickramaratne M, et al. (2013) Collaborating to develop Clinical Pharmacy Teaching in Sri Lanka Pharmacy Education 1: 29-35

TIO16. Pharmacy education in Malawi and collaboration for global practice

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Keywords: Pharmaceutical Education, Developing Nations, Curriculum Development, International Programmes

Objective: To establish the first academic pharmacy education programme in Malawi.

Design: In 2006, a BSc. (Hons) Pharmacy course was initiated within the College of Medicine of the University of Malawi. Initially, the pharmacy programme faced a number of challenges including lack of personnel, laboratory space and equipment. However, local and international collaborations helped to shape the programme, among them:

Malawi-Taiwan partnership: Taiwan provided the first Head of Department, funded student exchange programmes, and continues to provide scholarships for post graduate studies.

Malawi-German partnership: The German GIZ assisted in capacity building through short courses and Master/PhD courses for Malawian academic staff, supported the repatriation of Malawian academicians from the diaspora, and provided specialized expatriate staff.

FIP-UNESCO/UNITWIN Centre of Excellence in Pharmacy Education: This programme helped to build a network with other African schools of pharmacy, provided expertise in the curriculum review process, and helped with the acquisition of equipment for laboratory teaching.

The first group of eight students graduated in 2009. Initial graduates were quickly absorbed into the private health sector, leaving a continued demand for pharmacists in the public health sector. The yearly intake intake into the programme was therefore increased to 50 students.

Assessment: A survey in 2016 showed that graduates found appropriate employment in Malawi and reported good or reasonable job satisfaction.

Conclusions: International collaborations have enabled the Pharmacy Department in Malawi to graduate pharmacists with qualifications comparable to current international level. This resulted in a positive impact on the quality of pharmaceutical services in Malawi.

Stream 3B: Teaching Innovation (Wednesday): Communicating cleverly in professional development

TIO17: Medical Education in the press: Read all about it!

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Keywords: Medical Education, Problem Based Learning

Objective: After a long week of classroom- or ward-based teaching, it was observed that Year 3 medical students at Cumberland Infirmary Carlisle, demonstrated a general level of disengagement and lack of interest in learning on Friday afternoons. During discussions between the teaching team around educational enhancement to improve student engagement, an innovative teaching strategy was proposed. The framework of problem-based learning was employed to design the small group teaching sessions.

Design: A newspaper format was adopted for the purpose of bringing together medical diagnostic and therapeutic educational material to teach biological systems. Content, structure and delivery of the sessions were aligned to eight principles of a constructivist framework described by Savery & Duff (2001) and incorporated aspects of problem based learning (Figure 1).

Assessment: Seventeen of the 20 students (85%) completed a structured questionnaire of statements with a Likert scale to capture student views on the newspaper teaching sessions. Students unanimously claimed the newspaper was useful for learning and revision but were undecided for the teaching and practicing of prescribing. In a free text box, every student described the newspaper as “enjoyable”, “entertaining” or “engaging”.

Conclusion: The novel newspaper format provides an effective and engaging vehicle for a breadth of information in a variety of presentations that is aimed to achieve deep learning.

References

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TIO18: Teaching students what they want to learn: Videos on difficult patient consultations

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Keywords: Active Learning, Visual Learning, Pharmacy, Assertiveness, Stress Management

Objective: Our aim was to work with students to develop short videos addressing "difficult patient consultations" in pharmacy settings to use in a workshop.

Design: We ran a focus group with final-year pharmacy students (n=5) to define their learning needs and agree on distinct themes to be addressed through the use of 'bad' and 'good' video examples in a future workshop. Students described scenarios which they felt uncomfortable handling using their existing skills. These included everyday encounters such as telling patients that they could not dispense their medication (without guilt) and dealing with stressful situations (*e.g.* dispensing errors). We scripted two patient-pharmacist cases focusing on assertiveness and resilience skills with two versions of each (showing 'bad' and 'good' examples of practice). We acted out the scenarios, filmed and edited them and incorporated the movies within a workshop focusing on developing skills for dealing with difficult patient consultations.

Assessment: We evaluated the usefulness of the videos and the teaching session in two ways. We assessed students' confidence in their ability to deal with difficult patient consultations informally at the start and end of the sessions and also obtained qualitative feedback about what worked and did not work, and a rating of whether students understood the workshop and were satisfied with the teaching. There was a very positive response and students expressed an improvement in their confidence levels. They particularly valued seeing the videos.

Conclusion: Working with students to identify their learning needs was particularly effective at focusing our efforts to teach relevant skills for dealing with difficult patient consultations. We increased student engagement in learning through use of videos within a workshop learning environment.

TIO19: Rethinking how we speak with patients about their medicine - there's more than one way to skin a CAT

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Keywords: Communication Skills, Communication Theory, Active Learning, Role Playing, Peer Evaluation

Objective: Communication Accommodation Theory (CAT) posits that an individual's goals for a conversation drive the way they communicate with others. CAT identifies five strategies needed for effective communication to occur. We describe a CAT based learning experience developed for final year pharmacy students. We wanted to facilitate student identification, demonstration and peer-assessment of pharmacists' communication behaviours that meet patients' conversational needs (accommodative) and those that do not (non-accommodative).

Design: Our classroom-based skills module consisted of: reflection (individual and group on their goals for patient counselling); active learning (introduction to CAT strategies and use of humorous pop-culture videos to identify accommodative/non-accommodative behaviours); small group role plays of authentic pharmacist-patient communication scenarios including discharge counselling, new/continuing prescription encounters, medication reconciliation, adherence consultation; and peer evaluation (demonstration of accommodative/non-accommodative behaviours in role plays).

Assessment: Student peer evaluation during role plays utilised a CAT based tool adapted from one previously used in a Ph.D research study, and contained ten statements reflecting aspects of communication that typically occurs between pharmacists and patients (Table I).

Formal assessment of the tutorial was not conducted. However, unsolicited feedback from students included; "*This has made me re-evaluate how I talk with my patients*"; "*I realised I need to have conversations with patients*".

Conclusion: We successfully developed a learning experience using CAT to provide students with a fresh perspective and further strategies they can use to facilitate effective communication exchanges with patients.

Table I: Communication Accommodation Theory based tool for student peer evaluation

Communication Assessment Criteria	CAT Strategy*
1 The pharmacist spoke clearly – not too fast or too slow and with an adequate volume – so the patient was able to understand what they were saying	Approximation (Speech Production)
2 The pharmacist avoided the use of medical terms that the patient wouldn't understand	Interpretability
3 The pharmacist explained to the patient how their medication works in a way they could easily understand	Interpretability
4 The pharmacist allowed the patient enough time to ask any questions they had	Discourse Management (Conversation Management)
5 The pharmacist paid attention and listened to concerns the patient expressed about their medications	Discourse Management (Conversation Management)
6 The pharmacist allowed the patient to interrupt them with any questions they had	Interpersonal Control
7 The pharmacist demonstrated to the patient that they thought their worries and questions about their medicines were important to them	Emotional Expression
8 The pharmacist spoke to the patient in a respectful and courteous manner	Emotional Expression
9 The pharmacist encouraged the patient to talk to their doctor and/or community pharmacist about different medication options available for them	Interpersonal Control
10 The pharmacist encouraged the patient to take responsibility for managing their health	Interpersonal Control

*Communication Accommodation Theory

TIO20: Enhancing student learning through effective feedback

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Keywords: Active Learning, Feedback, Pharmacy Review, Educational Strategies

Objective: To implement strategies that enhances feedback effectiveness in pharmacy education.

Design: California Northstate University College of Pharmacy (CNUCOP) utilises Team-Based-Learning (TBL), a small group learning technique as its exclusive pedagogy. Although TBL inherently encompasses feedback through team and class discussion and peer evaluation, the faculty at CNUCOP have implemented additional strategies to enhance feedback effectiveness.

Assessment: One such strategy is the implementation of a team review exam prior to a major summative exam. The team exam has a similar format to individual exams, with the exception that teammates work together to answer questions and discuss answers. Our data suggest that students perceived taking a team exam as an effective approach to identify knowledge gaps and areas for improvement. Another strategy to provide effective feedback is a short meeting with each student after a

summative exam to review areas requiring improvement. Although this is a short meeting, it enriches the students' commitment to improve their academic performance, evidenced by an increase in requests for supplemental instruction from their peers or instructors. Furthermore, students are given feedback and receive training on giving feedback to their peers when they develop a formal case study presentation in their Pathophysiology/ Pharmacology class. Students are instructed to provide constructive, informative feedback to their fellow co-presenters and to other student presenters.

Conclusion: Providing timely and effective feedback is an instrumental approach to improve learning outcomes.

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Stream 1C: Education Research (Monday): Translating experiential research to the workplace

ERO1: Developing and implementing quality measures to enhance the educational experience of clinical placements

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Keywords: Pharmacy, Clinical Experience, Surveys

Background: Clinical placements enable students to apply theoretical knowledge in a practice context, and develop clinical and professional skills. Pharmacy students' clinical placements are commonly of an interdisciplinary learning nature, yet innovations to improve the quality of clinical placements are often discipline-specific and not robustly evaluated. Currently there is no instrument that measures the quality of clinical placements (Cusick, 2013).

Aims: To develop, pilot, refine, disseminate, and implement a suite of measures of quality in clinical placements to be completed by students, external placement supervisors, clinical academics, and workplace managers.

Method: A Delphi process was undertaken with students, supervisors, academics, and managers to develop the items associated with placement quality. Construct validity was assessed via ratings, by students, of the items on a survey. Exploratory factor analysis (EFA) of the quantitative data and thematic analysis of responses to the open ended questions regarding face validity and utility were undertaken.

Results: A total of 150 usable surveys were returned. EFA indicated one component accounting for 58.5% of the variance; eigenvalue = 4.10; Cronbach's Alpha = 0.87. Five themes emerged, relating to supervision, support, nature of work, student experience, and resources.

Conclusion: A robust measure of quality has been developed. An implementation plan is currently being undertaken involving the roll-out of the survey via the Faculty of Pharmacy and a major teaching hospital in Sydney. This second round of data will be analysed and reported at Prato in July 2017.

References

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ERO2: Professional identity formation of trainee pharmacists

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Keywords: Pharmaceutical Education, Professional Identity

Background: In the training of pharmacists in the UK, participation in real-life professional practice occurs predominantly in pre-registration training, in the year after completion of the four-year undergraduate M.Pharm course. As such, the pre-registration year is important in the development of professional identity.

Aims: To investigate the professional identity of pharmacy graduates in the pre-registration year; specifically, how does the trainee perceive and express their identity as a pharmacist?

Methods: University ethical approval was obtained. Four community pharmacy pre-registration trainees working in north-west England were recruited. A case study methodology using interviews, observations and documents was used to explore the trainee experience and self-perceptions.

Results: A distinct trainee identity was expressed that was transitional in the development of a pharmacist identity. This trainee identity was strongly influenced by the dyadic relationship with the pharmacist tutor, the presence of pharmacy technicians and by legal and corporate structures in the training year. Concurring with Holland & Lave's (2001) theory of dialogic identities, trainees experienced conflict between their identities of student, trainee and pharmacist throughout their training year which contributed to periods of acute stress upon role transitions at the start and end of the training year.

Conclusions: There are opportunities to modify the pre-registration training year in order to enhance the development of a pharmacist identity. Dialogic identity theory is enabling in understanding the process of professional identity development.

Reference

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ERO3: Training and Education Pharmacies: benefits of a tailored placement for 3rd year pharmacy undergraduate students

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Keywords: Student Placement

Background: In 2015-16, M.Pharm III students were each allocated a placement at a Training and Education Pharmacy (TEP). Unlike previous community pharmacy experiences, students did not receive a workbook. Instead, they had a session where they were supported to define their individual desired learning outcomes, which they had to share with their supervisor prior to their placement. Students were also given the Standard Operating Procedures (SOPs) of the TEP in advance of their placement; upon arrival at their TEP they were asked to sign against the SOPs for tasks they felt confident in undertaking.

Aims: Evaluating whether this non-traditional approach towards a community pharmacy placement is of benefit to pharmacy undergraduate students.

Method: Qualitative comments from students' reflective entries would be analysed thematically, whilst descriptive statistics from quantitative data would be calculated with Excel©.

Results: All 100 entries were analysed. Four themes were identified: learning into practice, pharmacy environments, communication, and patients at the centre of care. Ninety-one students considered the structure of their placement as satisfactory for their level of studies, while the remaining nine felt uncomfortable with the responsibility for learning activities lying on them. Ninety-eight students were satisfied with the level of support and supervision during their placement. Overall satisfaction was 4.25/5 (mode=4), and overall satisfaction with TEPs as opposed to traditional community placements was 4.26/5 (mode=5).

Conclusion: Increased responsibility on students for shaping their placement in a TEP was perceived as beneficial and appropriate for 3rd year students.

ERO4: Future proofing our profession: How does postgraduate study in clinical pharmacy change pharmacists' perceptions of their role and practice?

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Keywords: Reflection, Professional Identity, Higher Education, Pharmacists, Pharmaceutical Education

Background: The goals of postgraduate clinical pharmacy programmes (PCPP) are to develop the practice of pharmacists and enhance their contribution to patient care.

Aims: To explore student motivations and aspirations for commencing study of a postgraduate degree, and how the programme has influenced their development and future vision.

Methods: At the beginning and end of the PCPP, students were required to complete a survey prompting reflection on their development journey. Responses from consenting students were analysed thematically.

Results: Survey responses from thirty students in 2015 and 2016 were analysed. Key motivations for enrolment were the need for structured learning, improving practice and patient care, building confidence, enhancing clinical knowledge, research and communication skills, providing job security and progression, and improving job satisfaction. Development goals focused on becoming well-rounded pharmacists, identifying potential clinical specialities, becoming more patient-centred, capable to take on new roles, and to become a respected member of the healthcare team.

At programme end, students perceived a transformation in their practice. They viewed themselves as more confident, holistic and reflective practitioners with enhanced communication skills. They felt empowered to be change agents for the profession, armed with hope and perceiving future possibilities. They developed a deeper understanding of the contribution that they could make to healthcare; and many had accepted new positions. Outcomes often exceeded initial expectations.

Conclusion: Student perceptions indicate that motivations, aspirations and development outcomes align with the goals of the PCPP, serving to future-proof our profession.

Stream 2B: Education Research (Tuesday): Enhancing student skills for diverse needs

ERO5: Enhancing pharmacy students' inter-professional communication skills through Situation, Background, Assessment, Recommendation (SBAR) technique education

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Keywords: Inter-professional Relationship, Communication Skills, Education, Pharmacy Students

Background: Effective communication is essential to provide patient care and minimise medication errors. Initially utilised by the United States Navy to communicate critical information during high-risk situations, the SBAR tool has been adopted by the medical field to standardise and simplify communication between healthcare professionals.

Aims: To assess the impact of SBAR education on pharmacy students' communication skills and confidence in communicating with healthcare professionals.

Method: Evaluator/investigator-blinded, pre/post-intervention study. Third professional year pharmacy students in a required course completed a simulated communication activity before and after SBAR technique education. The intervention phase consisted of a lecture and small-group practice session. Study objectives were assessed via pre- and post-intervention activity grade comparisons and corresponding perception survey responses.

Results: Analysis included grades and survey responses from 192 (97%) students in a total class size of 198. Median grades significantly improved from pre-intervention 12/20 points (60% or D) to post-intervention 18/20 points (90% or A) (p<0.001). Confidence in delivering a medication-related recommendation increased globally from 43% (pre-intervention) to 92% (post-intervention) and individually, [pre-intervention Interquartile Range (IQR): 3-4 vs. post-intervention IQR: 4-5 (p<0.001)]. Most (93%) students indicated that the activity enhanced their communication skills.

Conclusion: Providing SBAR technique education significantly improved students' one-on-one communication and perceived confidence in communicating with other healthcare professionals.

ERO6: Are pharmacy undergraduates culturally competent?

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Keywords: Pharmaceutical Education, Pharmacy Culture

Background: The cultural competency (CC) of healthcare professionals has been demonstrated to reduce health disparities in ethnic minority populations.

Aims: To investigate the factors associated with CC in pharmacy undergraduates and identify the curricula activities perceived to contribute to developing competence.

Method: An adapted version of the Clinical Cultural Competency Questionnaire (CCCQ) (Like, 2001) was employed to determine the CC of first and final year pharmacy undergraduates. Follow-up focus groups facilitated in-depth discussion of key findings.

Results: Both first and final year M.Pharm students (n=135) demonstrated limited CC and poor knowledge of health disparities. The CCCQ indicated final year students to be comparatively more culturally competent; furthermore a significant positive correlation was identified with increased age and having lived or travelled abroad. Final year students attributed their increased competency to work-based placements. Curricula activities to develop CC were identified to be lacking in the pharmacy programme.

Conclusion: Recent international healthcare education research has reported on activities to develop undergraduate CC with the aim of enhancing students' preparedness in tackling the health challenges of increasing diverse populations. Similar UK studies have not been reported. The increasing patient-facing roles of pharmacists, escalates the necessity of addressing this issue.

References

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ERO7: From transaction to transformation - pharmacists developing patient-centred communication skills

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Keywords: Communication skills, Pharmacy, Professional Education, Experiential Learning, Qualitative Research

Background: Motivational Interviewing (MI) forms the basis for client-focused healthcare consultations and can assist pharmacists in developing patient-centred communication skills.

Aims: To evaluate the impact of teaching, learning and practise of MI skills on pharmacists enrolled in a postgraduate programme, as a means of developing patient-centred communication.

Method: Applying experiential learning theory, a module on patient-centred communication integrating MI was delivered online or as a workshop. An evaluation framework was developed, using thematic analysis and applying change and learning theories. Reflective, open journal entries of students' experiences practicing MI skills, at the beginning and end of the semester, were categorised within the framework as transactional (*e.g.* using basic communication skills), transitional (*e.g.* using MI techniques) or transformational (*e.g.* changing frames of reference).

Results: In 2015/2016, 89 of 101 pharmacists who completed the module provided two reflective blog entries for evaluation. Half of these attended the workshop.

The concept of MI seemed novel to all pharmacists. When applying the thematic evaluation framework to the journal entries, 38 (42%) of reflections fell into the transactional category, 51 (58%) were deemed transitional and none transformational. This changed to 10 (11%) transactional, 45 (51%) transitional and 34 (38%) transformational at the end of the semester. More pharmacists attending the workshop described transformational learning and changing their frame of reference.

Conclusion: Learning and practicing techniques of MI changed many pharmacists' frames of reference in regards to patient-centredness and communication style over time, confirming the effectiveness of practice-based and experiential learning, along with online delivery.

ERO8: Sense of community of native and ethnic minority students in the Utrecht Bachelor of Pharmacy programme

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Keywords: Sense of Community, Minority Group Students

Background: Feelings of social cohesion facilitate collaborative learning, and are associated with enhanced quality of learning. A previous study in the Bachelor of Pharmacy programme at Utrecht University has suggested that students of non-Dutch origin (around 40%) are less successful in Year 1 of their study. We hypothesise that this may be related to differences in social cohesion between students of different ethnic origin.

Aim: Assess sense of community in ethnic minority versus native students using a Dutch translation of Rovai's Classroom Community Scale (CCS) (Rovai, 2002).

Method: Students in Year 1 were asked to fill in the questionnaire twice (end of semesters 1 and 2). Ethnic background was determined on basis of the country where the student, or at least one parent, was born.

Result: Factor analysis confirmed the 2-factor structure of the CCS with the dimensions 'connectedness' (α=0.843) and 'interactive learning' (α=0.809). Both connectedness and interactive learning were significantly lower in ethnic minority students compared to native students at the end of the first semester (scores 18.2±0.8 vs 20.8±0.4, p=0.003; and 23.7±0.9 vs 27.1±0.5, p<0.001, respectively). This difference was no longer detectable at the end of the second semester.

Conclusion: The Dutch translation of the CCS is a reliable tool for assessing sense of community. The lower sense of community among ethnic minority students suggests that the level of social integration may be a relevant factor for study success.

References

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Stream 2C: Education research (Tuesday): Ensuring rigour in curriculum development and assessment

ERO9: Global perspectives about organisational readiness for change in pharmacy education

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Keywords: Pharmacy, Pharmaceutical Education, Curriculum Research, Organisational Theories, Surveys

Background: The challenges and opportunities facing pharmacy education amid rapidly evolving healthcare systems and practice models highlight the need to explore readiness for curricular change.

Aim: This study examined perspectives about organisational readiness for curricular change in pharmacy education.

Method: A 48-item survey was administered at the 2015 Monash Pharmacy Education Symposium (n=91, response rate 82%) and 2015 American Association of Colleges of Pharmacy annual meeting (n=50, response rate 83%). The survey included 42 items adapted from the Organisational Readiness to Change Assessment (Helfrich *et al.*, 2009), measured on a scale from 1-strongly disagree to 5-strongly agree, and six demographic items. Analyses included descriptive statistics to examine all items and ordinal regression to predict relationships between items about evidence, context, and organisational resources.

Results: Most participants were teacher/staff (93%). Thirty-three percent were from the United Kingdom, 44% United States, and 23% other countries. Most agreed there is evidence to support the need for change in pharmacy education (68%) and 71% indicated this need is supported by their experiences with students. Most agreed that their teachers are willing to innovate (79%) and leadership is trying to increase student engagement (78%). Only 23% and 54% agreed that staff incentives and equipment/materials are available for change, respectively. Responses about resources predicted responses about evidence for change ($p<0.05$).

Conclusion: There appears to be agreement that participants' schools are ready for change. Additional research should further explore educational processes and environments necessary for successful change.

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ERO10: Development of a competence framework for Pharmacy Technicians

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Keywords: Competence, Curriculum Development

Background: Since 2007, the pharmacy technician (PT) has been a member of the Dutch pharmacy support staff. The profession is evolving rapidly, imposing a need for clarity on job expectations and training. Insight in practicing knowledge, skills and attitudes is a prerequisite for designing education that is tailored to professional practice.

Aim: To develop a PT competence framework based on experiences and opinions of stakeholders from the Dutch pharmaceutical field.

Method: Qualitative research was used to develop the framework. Data were collected using focus group interviews with PTs (n=27) and pharmacists (n=12). After five interviews saturation was reached. Iterative analysis led to an initial framework, which was refined using the Delphi-method. The Delphi-panel consisted of PTs (n=8), pharmacists (n=12) and representatives of stakeholders like patient organisations, health policy makers and all levels of pharmacy education (n=14). A competence domain was considered relevant if a minimum of 80% consensus was reached.

Results: The framework comprises six competence domains: Communication, Multidisciplinary collaboration, Pharmaceutical expertise, Organisation, Collaborative leadership and Personal development. Each domain was extended with detailed descriptions about its practical implications.

Conclusion: The PT competence framework provides a solid foundation for both PT training and curriculum development. Furthermore, the framework adds to continuing professional development of the PT profession.

ERO11: Pharmacy students' engagement in learning activities, learning preferences and beliefs - lessons for educators

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Keywords: Learning Styles, Assessment, Learning beliefs

Background: Learning styles are attitudes and behaviours related to how students prefer to learn categorised as accommodator, assimilator, converger and diverger. Together with engagement in learning and learning beliefs, the effects on students' learning outcomes (academic performance) of how students approach their learning, is not well understood.

Aims: To investigate how 1st year pharmacy students approach their learning and whether this has an impact on achievement.

Method: The Health Professionals' Inventory of Learning Styles (H-PILS) tool (Austin, 2004), National Survey of Student Engagement (NSSE) scales measuring engagement in learning, and focus groups captured students' learning beliefs and approaches. H-PILS and NSSE data were merged with assessment data to determine the effects of learning style, demographics and engagement in learning on achievement (academic performance).

Results: Most students were assimilators (58.5%; n=83), reporting difficulty in reflective thinking and being self-directed, and scored highly on memorising material. Students recognised they needed to adapt their approach to learning at university. Despite this, when we investigated the extent to which learning styles and engagement predicted performance using multiple regression, we found few differences - with the exception of being from a minority ethnic group which negatively predicted performance on team-based learning (TBL).

Conclusion: Although quantitative analysis suggests learning styles and engagement have little effect on performance, qualitative findings suggest educators need to do more to support students in adapting to the higher education environment.

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ERO12: A pragmatic approach to identifying tools for assessing professionalism in pharmacy students: Phase 1

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Keywords: Pharmacy, Professionalism, Assessment, Undergraduate Students

Background: Measuring academic ability and competency are relatively straightforward using traditional and new assessment methods, yet measuring professionalism is more problematic, not least because of continuing lack of agreement around the definition. Discussion around professionalism is more advanced in medicine than in pharmacy, yet in both disciplines the fluid and evolving nature of the field is apparent. To side-step the issue of definition, this study assesses the usefulness of 'professionalism components' of assessment tools in a pragmatic way.

Aims: To compile a toolkit of instruments measuring professionalism relevant to M.Pharm students.

Hypothesis: Validated tools for assessing professionalism can provide the basis for a pragmatic approach to teaching and assessing professionalism.

Method: This paper reports work-in-progress on Phase 1 of the project: the identification of relevant instruments, through a comprehensive literature search, and analysis of the identified measures of professionalism to create a toolkit of useable measures. Covidence literature review software was used to identify papers that met the inclusion criteria (*i.e.* paper describes a tool to measure professionalism in students within a healthcare context).

Results: Over 1,000 articles met the inclusion criteria. Abstract review has so far agreed 100 articles for further review, and the concurrent analysis has identified ten tools with potential to be included in the toolkit.

Conclusion: Taking a pragmatic approach to evaluating assessment tools presents the potential for developing a toolkit of useful measures, which does not require agreement on a set definition of professionalism.

Stream 2C: Education Research (Wednesday): Establishing student learning needs for effective practice

ERO13: Longitudinal changes of student learning patterns in a six-year undergraduate pharmacy programme

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Keywords: Learning strategies, Longitudinal studies

Background: In The Netherlands the pharmacy licensing degree is obtained after a three-year bachelor plus a three-year master programme. The department uses an educational model that is aimed at the development of deep and self-regulating learning, but it is unknown whether this objective is reached.

Aim: The aim of this study was to assess longitudinal changes in processing and regulation strategies of students' learning during their progression in the curriculum.

Method: Processing strategies (deep vs. stepwise) and regulation strategies (self- vs. external) were measured with relevant 5-point Likert scales from the Inventory of Learning Styles (Vermunt & Vermetten, 2004) between 2005 and 2014. Longitudinal data are reported here for students of which data are available for Year 1 and Year 5 (n =30, mean ± SD). Effect sizes and a paired *t*-tests were used to assess statistical significance.

Results: Deep processing increased between Year 1 and 5 from 2.79 ± 0.63 to 3.57 ± 0.64 (p=0.003, effect size 1.2) and self-regulation increased from 2.54 ± 0.64 to 3.03 ± 0.72 (p=0.004; effect size 0.7). In contrast, stepwise processing and external regulation did not change significantly (p>0.13; effect sizes ≤ 0.1) between Year 1 and 5 for the same students.

Conclusion: An increase in deep processing and self-regulation strategies of students was observed. In contrast, stepwise processing and external regulating of learning did not change significantly. This suggests that the six-year programme effectively stimulates the development of deep and self-regulated learning strategies in pharmacy students.

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ERO14: What learning needs do cluster pharmacists have when commencing their role and after one year of practice?

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Keywords: Cluster Pharmacists, Learning Needs

Background: In 2015, thirty-four pharmacists began working in GP surgeries in South Wales, as part of the Welsh Government's plan for primary care, where healthcare services move from secondary to primary care and all healthcare professionals use their clinical skills and abilities to their maximum (Public Health Wales, 2015). These pharmacists have the potential to optimise patient medication, reduce drug wastage and transform the way that patient care is delivered in primary care (Martin *et al*., 2015).

Aims: To explore the pharmacist's learning needs on commencement of the role and the ongoing training required after a year of practice.

Method: All pharmacists who had started in these new roles in 2015 (n=34) were invited to participate via email. A response rate of 32% was achieved. Semi-structured interviews were conducted (n=11), recorded and then transcribed verbatim, before being analysed using inductive thematic analysis. Ethical approval was obtained.

Results: Pharmacists from different backgrounds (hospital or community) initially had different clinical learning needs but everyone felt there was a need for a mentor and training in a range of soft skills. Ongoing learning needs after a year in practice included more peer support and networking opportunities.

Conclusions: A flexible skills-based training programme with clinical mentors is needed to support pharmacists working in GP practices to practise effectively and embed into the multi-disciplinary team. Ongoing peer support and networking opportunities were then required.

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ERO15: Defining the concept of clinical reasoning for pharmacy education with experienced practitioners

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Keywords: Thinking Processes, Thinking Skills, Pharmacy, Decision Making, Experience

Background: Pharmacists are increasingly relied upon to provide clinical services such as prescribing and medicines review. Clinical reasoning is an essential skill for pharmacy practice but it has not been well described in pharmacy education research.

Aims: The aim of our study was to examine how experienced pharmacy practitioners use clinical reasoning in their practice. Our goal was to identify the components of clinical reasoning process in pharmacy practice that appear to be understood and used tacitly by experienced practitioners.

Method: Qualitative research methods were used to collect interview data from experienced pharmacy practitioners. The data were analysed thematically within an interpretive theoretical framework using a general inductive approach.

Results: Preliminary findings indicate that the components each experienced practitioner reported as important varied in relation to the context of their practice; however, several components were identified in common across all clinical settings. Common components included the concepts of providing care, accessing and interpreting evidence, and addressing uncertainty.

Conclusion: Clinical reasoning appears to be vital to clinical practice but practitioners were not able to discuss it directly. Instead, context-specific and common components of clinical reasoning were identified from how experienced practitioners described surprising or distressing events that occurred during their practice. Findings will be used to inform the undergraduate and postgraduate curriculum at the University of Otago, School of Pharmacy. Findings will also be used to design a prospective longitudinal study about how students develop clinical reasoning skills during their three years of study at the School of Pharmacy.

ERO16. Does time management matter? Assessing student time use in a doctor of pharmacy programme

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Keywords: Time Use Data, Time Management, Pharmacy, Pharmaceutical Education, Medical Education

Background: Study strategies, including time-management techniques, are often independent activities that students engage in with little direction or guidance. Consequently, the effectiveness of study habits is not always correlated with duration of studying. Additionally, other non-academic activities can serve to complement curricular material and thus improve student academic success.

Aims: To evaluate how pharmacy students spend their time across the first and second year of a doctor of pharmacy (Pharm.D) programme and assess if students' time use changes throughout the programme.

Method: Students in a redesigned Pharm.D curriculum at the UNC Eshelman School of Pharmacy participated in a three-part time-use exercise consisting of: (1) time-use prediction; (2) time-logging; and (3) time-use reflection during the first and second year of the programme. Students predicted time spent on predefined activities including activities of daily life (*i.e.* sleeping, hygiene, meals), academic activities (*i.e.* attending class, studying, participating in co-curriculars), and discretionary activities *(i.e.* exercising, engaging in social activities, viewing media or social media, working for pay). Students completed a weeklong time-log exercise documenting time spent in these areas and utilised individualised time use summary reports to answer reflection questions.

Results and Conclusion: First year Pharm.D students (n=138) reported spending 7.8 hours (or 33% of their time) during the weekday on academic activities compared to 12.3 hours (51%) on activities of daily life. The remaining 3.9 hours (16%) was spent on discretionary activities. Sixty-one percent of students found the exercise useful and 64% reported it motivated them to change their time use. Data collection and analysis of the second year students is currently ongoing.

Education Research Abstracts

ERP1. A study to explore students' beliefs on lecture attendance

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Keywords: Lecture Attendance, Behaviour, Absenteeism

Background: Lectures are a fundamental and dominant teaching tool in universities. However at the University of Reading, School of Pharmacy, we have noticed lecture absenteeism. This is a cause for concern as low attendance rates are associated with lower grade attainment (Cohn & Johnson 2006).

Aim: To investigate students' beliefs on lecture attendance using the Theory of Planned Behaviour (Ajzen, 1991)

Method: Focus groups were conducted with Year 2, 3 and 4 M.Pharm students and telephone interviews with alumni students. Students were asked about behavioural, normative and control beliefs regarding lecture attendance (Ajzen, 1991).

Results: Thirty-six students were recruited. Key benefits of attending lectures were the ability to add extra information to handouts, and lectures are a good visual and audio aid to support learning. Key drawbacks of attending lectures were poor lecturing style (reading off slides, talking too fast) and timetabling issues (9 a.m. lectures or big gaps between lectures). The most important influence on attendance was self-motivation. Friends may encourage or dissuade attendance. Students were more likely attend if the lecturer has an engaging delivery, or if the content was perceived as difficult.

Conclusion: By utilising the Theory of Planned Behaviour it was possible to understand factors affecting students' lecture attendance.

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ERP2. Clinical and Implementation Training for Pharmacist Diabetes Screening Services - a mixed methods approach

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Keywords: Professional Development, Adult Education, Online Learning

Background: The Pharmacy Diabetes Screening Trial (PDST) cluster RCT is currently underway in a representative sample of 363 Australian pharmacies. It will compare the clinical and cost effectiveness of three approaches to pharmacy-based screening for diabetes: risk assessment alone using a validated tool (Group A); risk assessment followed by a point-of-care (POC) test for either HbA1c (Group B) or small capillary blood glucose test (scBGT) (Group C) in participants with elevated risk scores. Those indicated for further investigation based on clinical algorithms, are referred to their GPs and followed up by pharmacists.

Objective: To describe the training programmes developed to support pharmacist implementation of PDST service protocols

Design: The clinical and implementation training is framed around adult learning principles and comprises initial self-directed learning through four interactive online modules followed by in-pharmacy skills training for use of POC devices for groups B and C. Tailored versions of the online modules were produced for each of the three trial groups (A, B, C). Training has been independently assessed and approved by the Pharmaceutical Society of Australia.

Assessment: Pharmacists are eligible to perform screening if they: (a) correctly answer 80% or more of the 20 multiple choice questions (MCQs) addressing the modules' learning objectives (also entitles participants to eight continuing professional development (CPD) points; (b) demonstrate competent use of their POC device against device-specific analytical checklists: and (c) submit a satisfactory implementation plan for their pharmacy with colleagues.

Conclusion: A novel training programme for pharmacy based diabetes screening has been developed and implemented in 2017.

ERP3. Developing a Leadership Attributes Development Tool (LADT) for pharmacists.

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Keywords: Leadership, Pharmacists, Development, Design

Background: It is widely accepted how crucial it is to understand the development of leadership attributes of practitioners, alongside the essential infrastructure and support mechanisms for the development of leadership across all stages of the pharmacy workforce. The development of education & training strategies and plans targeted to developing these leadership attributes will then result in a workforce better able to deliver the evolving health service needs. This aligns with the WHO statement "No health without a health workforce" (2013).

Aims & Objectives: The objectives for the study are as follows:

1. To investigate how pharmacists, perceive their own leadership attributes
2. To conduct a review of the delivery of current leadership attribute development for pharmacists
3. To evaluate how leadership outcomes are recognised amongst the professional body
4. To evaluate the leadership attribute development tool for pharmacists.

Method: Exploratory sequential mixed methods design was chosen for this study.

Results: Two hundred and thirty-one UK pharmacists were included in the study. From the pharmacists surveyed, 82 were from the community, 75 from hospital, 18 from pharmacists in general practice sector, 22 from academia, nine from clinical commissioning groups (CCGs), seven from industry and 36 from a wide range of alternative sectors.

Interim conclusion: Leadership and the development of leadership is under-researched in the UK; in particular pharmacy leadership. This trend has also been explored globally via the literature review. Post Francis (2012), leadership has become a focus for healthcare provision in the UK. The Royal Pharmaceutical Society launched the pharmacy adaptation of the NHS Leadership Development Framework (2014), and the use of this, alongside other tools means this is an optimum time to conduct this evaluation of leadership development within pharmacy.

ERP4. Pharmacy students' attitudes and perceptions of 'virtual worlds' in clinical pharmacy teaching

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Background: Three-dimensional Virtual Worlds (3DVWs) are an emerging method used in both traditional classrooms and distance education. However, despite its growing popularity in medicine and nursing the uptake in pharmacy has been slow.

Aim: To explore pharmacy students' perceptions and experiences of 3DVWs as an instructional tool for clinical pharmacy teaching.

Methods: Semi-structured interviews were carried out with Master of Science in Pharmacy students who had participated in communicative exercises in a 3DVW. Interviews were digitally recorded, transcribed and analysed using thematic analysis.

Results: More than half of the students were positive about using 3DVWs for educational purposes and see the advantages of having a setting where communication can be practiced in an authentic but 'safe' environment available online. However, many students also reported technical difficulties in using the 3DVW which impacted negatively on the learning experience.

Conclusion: Perceived ease of use and usefulness of 3DVWs appears to play an important role for students. The students' level of engagement relates to not only their computer skills, but also to the value they place on virtual worlds as an instructional tool.

ERP5. Differences in UK and Australian pharmacy undergraduate students' reflections on a medication adherence teaching activity

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Background: Teaching pharmacy students about patient perspective is challenging; awareness of the different types of non-adherence is fundamental.

Aims: Compare awareness of pharmacy undergraduate students on barriers to medicine-taking.

Method: A week-long medication simulation activity took place with entry level students in two schools of pharmacy in UK and Australia. A standardised form was used for monitoring medication adherence to one-of-five

dosing regimens and exploring the reasons for missed doses. Quantitative data were analysed using SPSS©. Mann-Whitney U and Kruskall Wallis tests were used to assess differences in adherence with regards to dosing regimen. Student comments regarding non-adherence were analysed using thematic analysis. Research ethics approval was obtained from both schools.

Results: Table I summarises descriptive statistics from both sets of data. There were no statistical differences in adherence rates based on number of doses of medicines in the UK. In comparison, there were significant differences in adherence between dosing regimens ($p<0.001$) in Australia. Four common factors relating to unintentional non-adherence were identified (timing, convenience, dosing, and routine) and one factor for intentional (lack of importance in UK, nature of treatment *e.g.* contraception in Australia). Use of resources (*e.g.* alarms, peers) was highlighted by both cohorts as useful to improve adherence. Students reported that the activity was more challenging than they first thought, but perceived the chance to be involved "hands on" as valuable towards empathising with patients.

Conclusion: Students in both countries demonstrated more awareness of the unintentional reasons for non-adherence.

Table I: Descriptive statistics from student data in UK and Australia

	UK (n=115)	Australia (n=239)
Response rate	66 1% (67/115)	49.4% (118/239)
Mean	88.7	70
Range	4-100%	0-100%
SD	19.77	29

ERP6. Surveying career aspirations and motivations for choosing pharmacy of pharmacy students at UCL School of Pharmacy, UK

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Background: Athena SWAN Charter was established in 2005 to encourage and recognise commitment to advancing the careers of women in STEM and medicine employment in higher education and research. As part of the initiative, exploring the factors that influence or hinder career progression for women is high on the agenda. Anecdotally, it has been noted in the pharmacy profession, that the higher you go up the career ladder, the less females are seen. This then poses the question: 'What are the career progression barriers for women?'.

With pharmacy being a popular course of study amongst females, understanding the career aspirations of students and their motivations for why they chose pharmacy as a career will give more of an understanding of the trends of why there are fewer females within leadership positions in the pharmacy profession.

Method: A survey was designed and developed to explore the motivations of choosing pharmacy as a career and to explore career aspirations of pharmacy undergraduates at UCL School of Pharmacy. Using Qualtrics, a survey was made available online and sent to all four year groups of the M.Pharm cohort. Students were given two weeks to complete the survey.

Results: Two hundred and sixty-four students completed the survey. One hundred and ninety-seven were female, 67 were male.When ranking the motivations for study, 76 ranked "Wanted to be a pharmacist" as a first choice.

Interim conclusion: Once the factors and barriers are analysed, this can enable educating pharmacy students accordingly by ensuring the education they receive is geared towards what the students need. Higher education institustions (HEIs) have a responsibility to support students to achieve their career aspirations and goals. This can in turn open up new opportunities. The intention is to collect data over four years to see if aspirations change as pharmacy students' progress through their undergraduate studies.

ERP7. Pharmaceuticals and the environment - what are the learning needs of pharmacy students?

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Keywords: Academic Education, Undergraduate Students, Pharmacy, Education, Environment

Background: The impact of pharmaceuticals on the environment is increasingly being researched. As awareness of this issue raises, there is greater interest on ensuring that healthcare professionals are equipped to manage this in their practice (Davidson *et al.*, 2014).

Aims: To ascertain pharmacy students' learning needs with regards to the impact of pharmaceuticals on the environment.

Method: Upon a favourable ethical opinion, students in the 4th year of the Pharmacy course at the University of Portsmouth were invited to take part in an anonymous questionnaire survey in November 2016.

Results: Out of 102 students, 73 completed the questionnaire. Varied levels of knowledge were reported, with 41% indicating this was poor, and 36% that this was acceptable. A total of 52% showed some interest in knowing more about this subject, with 17% having great interest. The course made very little contribution towards their knowledge in 54% of students, and for 30% it had no impact. In terms of curriculum, 34% agreed that this

subject should be included, and 30% remained neutral. A total of 45% indicated that they were unlikely to further their education on this topic upon registration, with 39% sharing that they probably would do.

Conclusion: This study shows that there is scope for developing the knowledge of pharmacy students on the impact of pharmaceuticals on the environment. Further research needs to be undertaken to evaluate how this could best take place.

References

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ERP8. Evaluation of graduate pre-registration training support

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Keywords: Graduate, Learning Pharmacist, Teaching Methods

Background: In Great Britain, the current system of graduation is followed by a mandatory one-year of supervised pre-registration training. A registration assessment follows this training year and lower pass rates, especially in June 2015, have contributed to debates about the quality and consistency of training provided for pre-registration graduates. Continued support from the graduating university is currently not mandatory, however at UCL, we are examining ways in which the university can extend and outreach continued educational and developmental support.

Aims: To evaluate the utility of the pre-registration support offered to pharmacy graduates and determine the preferred learning formats during this experiential pre-registration training period.

Method: Pre-registration support was offered to trainees who graduated in 2015 (n=182). This was provided using two main formats: a series of three face-to-face support days and online material provided via a Moodle page. Feedback for both formats was collected via online questionnaires using Qualtrics and also a live audience response voting system (TurningPoint) on support day three.

Results: Forty-point-one percent of graduates accessed both face-to-face days and online material; 23.6% came only to the face-to-face days and 4.9% only accessed online material. An online questionnaire was released about online support but only three graduates responded. How useful the graduates found the modes of teaching and support can be seen in Table I.

Conclusion: Overall, the sampled graduates preferred a combination of support in the form of face-to-face interventions and online material. Whilst just over half the graduates would have preferred all topics to be covered using multiple choice questions (MCQs), a large proportion also found having a mixture of formats the most useful.

Table I

Which mode of teaching would you find the most useful?	% of graduates (n= 73)
ALL lectures	6.8%
ALL Multiple Choice Questions (MCQs)	50.7%
ALL case studies	5.5%
ALL online content and no face to face days	2.7%
A mixture of formats	45.2%

ERP9. Using self-determination theory to explain motivation for academic study by pharmacy undergraduate students at one pharmacy school

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Background: There are many published studies examining motivation but little on motivation in pharmacy students in the UK. Use of goal achievement theory in Australia and in an international pharmacy context is a notable exception. Understanding motivation is helpful in augmenting a student's motivation for their studies.

Aim: To explore factors which pharmacy students identify as affecting motivation for academic study in 2015/16 at one pharmacy school.

Method: A topic guide was developed after review of literature & curriculum documents and group discussions. Semi-structured interviews were conducted with purposively selected final year pharmacy students. They were audio-recorded with consent and analysed using thematic analysis.

Results: Twenty-four participants participated. Six themes were developed: A-Failure, B-Contribution to final degree mark, C-Perceived relevance and 'Interest/ Enjoyment'. Using self-determination theory (SDT), themes A and B were extrinsic (external regulation, an external perceived locus of causality) and theme D related to intrinsic motivation (internal perceived locus of causality). Several students reported that for some content/assessments they were extrinsically motivated (fear of failure and/or wanting good marks as per themes A and B). Although they were not intrinsically motivated, that is, they did not explicitly enjoy or find interesting these elements they reported relevance *e.g.* to future career (Theme C). SDT categorises this motivation as

extrinsic but internally regulated. That is, there is some internally perceived locus of causality associated, unlike with externally regulated motivating factors.

Conclusion: Faculty have been made aware of findings. Research is needed to see if interest, enjoyment & relevance (intrinsic motivation) can increase as deeper student engagement with learning may also result.

ERP10. Inter-professional prescribing education between medical and pharmacy undergraduates. A two year follow-up qualitative study of medical students

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Background: Many undergraduate inter-professional education (IPE) studies have reported satisfaction and/or short-term outcomes. There is a lack of research reporting longer-term effects of medic-pharmacy undergraduate IPE sessions.

Aim: The study aimed to explore what medical students perceived was applied, in the two years following therapeutics/prescribing IPE.

Method: After a literature review and ethical approval, medical students were invited to participate in one-to-one semi-structured interviews (audio-recorded with consent, transcribed and analysed using thematic analysis). Interviews explored views regarding the IPE session, suggestions for improvements and what they perceived to be the learning from the session they had applied subsequently.

Results: Twenty medical students were interviewed two years following a specific 3rd year IPE. The session was useful, some session content had been applied during subsequent clinical placements and assessments and believed that IPE could improve communication and teamwork skills. Suggestions for session improvements were also made.

Conclusion: Using a modified version of Kirkpatrick's model of evaluating learning (Hammick *et al*., 2009), level 1 (reaction), 2a (modification of attitudes), 2b (acquisition of knowledge or skills) and level 3 (behavioral change) had been reached. There were no examples at level 4 (organisational change) or 5 (improved patient outcomes). This was not an unexpected finding as current undergraduates were interviewees. Accepting the potential limitation of recall bias, medics were able to explain circumstances where they had applied their learning to practice. A similar study of pharmacy participants is planned later this year.

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ERP11. A case study-developed theory about the interplay between learning theories and educational practices in the Pharm.D programme at Qatar University

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Keywords: Case studies, Communities of Practice (CoP), Qualitative Research, Pharmaceutical Education, Learning Theories

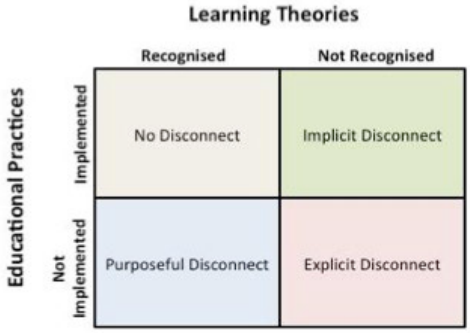
Background: A literature review in pharmacy education demonstrated that learning theories are not fully implemented in educational practices, such as: curriculum design, teaching strategies and assessment. This has resulted in a disconnect between theory, practice and research (Waterfield, 2011).

Aim: Investigate the nature of the disconnect between learning theories and education practices in the Qatar University (QU) Pharm.D programme.

Method: A Communities of Practice (Wenger, 1998) framework is developed through a case study research approach (Yin, 2014). The framework is used as a theoretical instrument to pedagogically analyse the QU Pharm.D programme.

Results: The identified pedagogical issues in QU programme have led to the proposal of a theory about the interplay between learning theories and educational practices, and to discern four "levels" of the disconnect.

Conclusion: Educational programmes should be based on the explicit implementation of a comprehensive learning theory. This positively influences the academic and practice sectors and the accreditation and regulator agencies, and ultimately students learning experiences. Integrated efforts of academic, practice, accreditation, and governmental sectors are hence needed in educational reform initiatives.



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ERP12. What impact did the 'Communicating for Success' training have on pharmacy professionals' abilities to communicate more effectively in practise?

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Keywords: Communication, Impact In Practise

Background: The role of pharmacy professionals is evolving requiring them to communicate in new ways, to a more diverse audience. The 'Communicating for Success' workshop was designed to equip pharmacy professionals with enhanced presentation skills that would improve the quality of their communication. The three key themes from the workshop were to use more images and reduce text in presentations and incorporate storytelling techniques to increase the impact of the message (Hayes, 2016).

Aims: To evaluate the impact that the 'Communicating for Success' workshop had on pharmacy professionals' abilities to communicate more effectively in practise.

Methods: A convenience sample of participants who had attended the training were invited to participate in the study (n=23) via email. A response rate of 34.8% was achieved. Semi-structured telephone interviews were conducted (n=8), recorded then transcribed verbatim before being analysed using deductive thematic analysis. Ethical approval was obtained.

Results: All respondents agreed that the workshop was highly beneficial in providing the knowledge of how to make presentations more engaging with the majority stating they were now confident to present to an audience. All respondents stated that they now incorporate more visual aids and less text into their presentations. The majority of the respondents stated that they now use the storytelling technique to create an impact when presenting.

Conclusions: The 'Communicating for Success' workshop increased the participant's confidence in presenting to an audience and provided the knowledge to enhance the quality of their communications.

References

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ERP13. "We, as healthcare professionals in the future, should always treat patients in care as how we would like to treat our family members": Pharmacy students undertaking role-emerging placements in social care

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Keywords: More than 67% of pharmacists in Wales interact with social care staff at least once a week (Jenkins *et al.*, 2016), and an increased emphasis is placed by the Government on caring at home and outside of secondary care. Undergraduate pharmacy students undertook a role-emerging placement in social care, with learning outcomes around awareness of referral mechanisms and challenges surrounding pharmaceutical care of service users. Three providers were users: care homes, whereby students would participate in a medication round; Carers Trust, whereby students would attend weekly groups where the carers (young and adult) or the person they care for meet; British Red Cross, whereby students would shadow support workers when visiting clients' homes.

Aims: Action research project, evaluating students' perceptions on their social care placement.

Method: Students' reflective entries would be analysed thematically.

Results: All 151 entries were analysed. Six themes were identified: role of carer/carer awareness, role of pharmacist/signposting, multidisciplinary team, patient perspective, student professional development, and impact on future practice.

Conclusion: Role-emerging placements in social care provided students with an insight of the challenges surrounding holistic care for individuals who are being cared for by relatives or in the third sector, with a perceived greater appreciation for the patients' needs. Increased awareness of the role of carers and how pharmacists can provide support is a first step towards improved patient care.

Reference

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ERP14. Curriculum mapping of European pharmacy curricula using the European Pharmacy Competences Framework

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Keywords: Competence, Curriculum Evaluation

Background: Recently the European Pharmacy Competences Framework (EPCF) was published (Atkinson *et al.*, 2016), but it is unknown whether this framework can serve as a tool for guidance in curriculum evaluation and development.

Aim: The objective of this study was to evaluate the usefulness of the EPCF for the mapping of existing first-degree pharmacy curricula in Europe.

Method: In this mapping exercise the intended curriculum of six programmes from different countries, and the expected competence level at first-degree, was assessed. Curricular elements (courses, projects, rotations, *etc*.) were mapped on the 50 competencies of the EPCF. At the end of the mapping process, a questionnaire was distributed to evaluate the content and usability of the framework and the effectiveness of the mapping process.

Results: The description of competences in the EPCF was found to be complete with respect to community and hospital pharmacy, but for some countries scientific and industrial competencies may require additional attention. Suggestions were made to add further explanations, illustrations and examples of explicit learning outcomes to increase the usability of the framework. The mapping process was experienced as complex, time-consuming, but interesting. In general, the mapping process was organised internally but future consultation of alumni and pharmacy employers was deemed desirable. A need for training in reflective curriculum evaluation was felt.

Conclusion: This first round of curriculum mapping suggests that the EPCF is a useful tool for curriculum evaluation, but further refinement of the framework and training of faculty is needed to enhance effectiveness.

Reference

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ERP15. Continuing education in public health for pharmacists in Brazil: Evaluation of a national e-learning specialisation course

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Keywords: Continuing Education, Public Health, Professional Education

Background: Between 2010 and 2015, 2,440 pharmacists who work in the Unified Health System (the Brazilian public health system – SUS) completed a specialisation course on Pharmaceutical Assistance Management supported by the Ministry of Health. The 15 month course was developed in an e-learning platform and four classroom meetings. All pharmacists had to develop an interventional project in their workplace at the end of the course.

Aim: To evaluate the perspectives of nationwide politicians and course´s staff about the course development and its impact in public pharmacy sector.

Methods: Through a nationwide workshop setup to evaluate the course (in 2016) 51 stakeholders participated in a SWOT analyses (Strengths, Weaknesses, Opportunities, and Threats): politicians and managers (representatives of Ministry of Health, States and Municipalities governments), professional bodies´ representatives and course´s staff (tutors, regional coordinators, professors, supervisors).

Results: Four major subjects were identified: pedagogic project; course´s structure; learning tools; and personal interactions process. The major strengths discussed were the gratuity, the decentralised infrastructure within the regions, technical support, practice in services as teaching methods, interventional projects and incentives for debates and forums. The major weaknesses were the huge amount of contents, pharmacists and professors´ little experience in e-learning, and social differences within the geographic regions.

Conclusions: This first step of the course´s evaluation concluded that it was a very important opportunity for pharmacists and public health services, and identified the pedagogic and structure issues to be improved in the forward courses.

ERP16. Students' satisfaction with pharmacy distance education in northern Sweden

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Background: In 2003, a web-based three-year Bachelor of Science in Pharmacy programme was established at Umeå University. Web-based education has a lot to offer to students in terms of increased flexibility, but has also been criticised with arguments that some educational and social experiences may be lost. In 2009, the pharmacy system in Sweden was re-regulated and as a consequence, partly new tasks for the pharmacists have evolved.

Aims: To examine the level of education satisfaction among graduates of the pharmacy programme and to compare the level of satisfaction before and after the re-regulation.

Method: A cross sectional survey was distributed in 2015 to all who graduated from the pharmacy programmes between 2006 and 2014 (n=511). Responses to questions about graduates' satisfaction with the Bachelor of Science in Pharmacy programme are presented (n=200).

Results: Of the graduates, 88% agreed or strongly agreed that the knowledge and skills acquired during their education were useful in their current job. Further, 82% stated that they would start the same programme if they

were to choose again and 92% agreed or strongly agreed that they would recommend the programme to a prospective student. Graduates were more likely to recommend the programme after the re-regulation (Table I). Graduates also noted that during their education they would have wanted more applied pharmacy practice and self-care counselling and less social pharmacy and histology courses.

Conclusion: The pharmacy graduates were very satisfied with their education and no negative effects of the re-regulation could be observed.

Table I: Multivariate logistic regression including different questions regarding education satisfaction

Total number of people *n*	Before re-regulation 2006-2009 n=96	After re-regulation 2010-2014 n=96	Odds ratio*	*p*-value
The knowledge and skills acquired during the education are useful in my current job.	81 (85.3)	86 (91.5)	2.437	0.079
I would recommend the programme to a prospective student.	82 (87.2)	91 (96.8)	6.945	0.007
The duties at work reflect the education.	70 (73.7)	76 (79.2)	1.851	0.100
If I had to choose today, I would start the same degree programme	70 (77.8)	80 (85.1)	2.065	0.082

* Controlled for age

ERP17. Ensuring access to quality education in pharmacy for all students

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Keywords: Access To Education, Diversity

Background: If we are serious about diversifying the pharmacy and healthcare workforce, we must be serious about providing access to quality education programmes for diverse groups of students. Progress has been made to diversify higher education and create inclusive environments. However, problems and concerns, such as access, plaguing our worldwide systems of higher education have remained consistent over time and even intensified. Though there have been advances such as policy initiatives to increase access to higher education, many inequalities still exist and "privileged classes" have an advantage over their counterparts in several countries. More work must be done to level the playing field. This work aligns with FIP's workforce development goal 1 (WDG1) for academic capacity which emphasises standards to ensure access to quality education for all students.

Aims:

- To explore what has been done to ensure access to quality education in pharmacy
- Provide recommendations to advance access in pharmacy education

Method:

- Review current practices concerning access within and across University of North Carolina (UNC) and Monash University SoPs
- Systematically review and synthesise published research (globally) concerning access and diversity

Results: A preliminary literature search using key terms (*e.g.* access, diversity) revealed 35 articles, only seven of which were primary research studies concerning access to quality education for all students.

Conclusion: While the lack of research is alarming, this provides an opportunity for this generation of scholars to become leaders in this area and address a critical need in pharmacy education. Future direction for research including applicable theoretical frameworks and exploratory research questions will be provided.

ERP18. Identifying the facilitators and barriers for scientific writing among pharmacy students in College of Pharmacy, Umm Al-Qura University: A qualitative study

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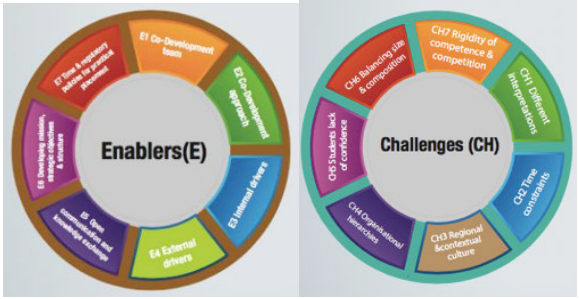
Background: Scientific writing in the English language is essential for students of health-related degrees including pharmacy in this modern era of research. Students find scientific writing very challenging in the countries where English is not the first language and pharmacy programmes are delivered in the English language.

Aim: To explore the facilitators and barriers for scientific writing faced by undergraduate pharmacy students in Umm Al-Qura University.

Method: We used in-depth face-to-face semi-structured interviews in Arabic with 4th and 5th year students of our college to gain an insight into facilitators and barriers for scientific writing from their perspective. An interview guide was prepared and piloted in the Arabic language. Eighteen participants agreed to be interviewed and signed consent forms. The interviews were conducted in the college. All interviews were audio recorded and transcribed *verbatim* later.

Results: Mean interview time was 18 minutes. Two researchers analysed the qualitative data independently using thematic analysis and agreed on the coding and themes later. A third researcher verified the coding and themes on randomly selected transcripts. Early interim analysis has shown facilitator themes around 'having rich vocabulary', 'increased writing activities', 'individual guidance' and barrier themes such as 'lack of vocabulary', 'time constraint', 'lack of ideas', 'lack of guidance' *etc*. More detailed data analysis is still underway.

Conclusion: Early analysis shows that efforts are needed from the college to develop the culture of scientific writing among students as part of the curriculum. Individual guidance by mentors must be an integral part of strategy encouraging scientific writing among students of bilingual countries.



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ERP19. Examining enablers and challenges to implementing Communities of Practice theory in the Pharm.D programme at Qatar University

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Keywords: Curriculum Design, Communities of Practice (CoP), Qualitative Research Methods, Pharmaceutical Education, Learning Theories

Background: The CoP learning theory (Wenger, 1998) has been used in medical education to support collaborative practices and knowledge transfer (Mazel & Ewen, 2015). CoP provides excellent opportunities for pharmacy curriculum design and restructure (Noble *et al*., 2011). This requires integration between CoP theory and educational practices, and collaboration from academic, practice, accreditation, and governmental sectors.

Aim: Investigate enablers and challenges to CoP implementation in the Qatar University (QU) Pharm.D programme.

Method: A theory-driven CoP Framework (CoPF) is used as an instrument to analyse QU Pharm.D programme design.

Results: Data from focus groups, interviews and key documents were used to examine the evidence of CoPF implementation in the programme. Key elements of CoPF enablers were partially evident, while major challenges in CoPF were evident.

Conclusions: When designing programmes using a CoP theory, it is important to ensure that enablers are planned for and challenges are mitigated. This calls for integrating academic, practice, accreditation, and governmental sector efforts in pharmacy education reform initiatives in order to achieve the optimal connection between learning theories and educational practices.

ERP20. The impact of feedback quizzes on academic performance and the student experience in two pharmacokinetics courses

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Keywords: Pharmacology, Feedback, Higher Education, Evaluation, Performance

Background: Pharmacy students do not typically enjoy studying pharmacokinetics because of its mathematical nature and perceived lack of relevance to clinical practice. To improve teaching at our institution, quizzes were introduced into an intermediate and advanced course in this discipline in 2013 and 2014 respectively.

Aims: To retrospectively evaluate the impact of two different approaches, of introducing 'feedback quizzes' to enhance teaching of clinical pharmacokinetics, on the experiences and academic performance of undergraduate pharmacy students.

Methods: Formative paper-based quizzes were introduced into tutorials in the intermediate course and summative online quizzes were introduced into the advanced course. Academic performance (based on student marks) and student experience data (based on the proportion of students who agreed or strongly agreed with statements in an institutional evaluation survey) were compared pre- and post-curricular change using a Mann-Whitney-Wilcoxon test and Test of Equal Proportions, respectively.

Results: Statistically significant increases in academic performance were noted in both courses; from 75.0 to 77.0% (p=0.033) for the median weighted mark in the intermediate course, and from 77.8 to 85.7% (p=0.002) for the median mark in the pharmacokinetic component of the final exam in the advanced course. A non-significant trend towards increased overall course satisfaction was seen in both courses compared with the previous cohort (intermediate 87% vs 78% (p=0.3), advanced 63% vs 50%, (p=0.35)).

Conclusion: Our study demonstrated that quizzes, whether formative or summative, administered in-class or outside class, can enhance learning and lead to modest improvements in students' satisfaction of two pharmacokinetics courses.

ERP21. Quantitative analysis of factors affecting lecture attendance

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Keywords: Lecture Attendance, Absenteeism, Student Behaviour

Background: Lectures are at the forefront of university teaching, yet are criticised for their passive teaching approach, which has seen a rise in student absenteeism.

Aim: To quantitatively explore influences on lecture attendance.

Method: A questionnaire was created using the Theory of Planned Behaviour (Ajzen, 1991) and previous focus group findings (Langran, 2017), and sent to all M.Pharm students at the University of Reading.

Results: Response rate was 26% (n=129). The most important reasons for attending lectures were lecturers verbally adding information (50%, n=65) and making learning more memorable (n=31, 24%). The most significant drawbacks to attending were inconvenient timetabling (n=34, 26%), student loses focus (n=41, 32%) and poor teaching quality (n=36, 28%). Seventy percent (n=90) believed attending lectures improves exam grades. The most dominant reasons making attendance difficult were waking up for 9 a m. lectures (n=44, 34%) and other academic deadlines (n=32, 25%). The most important influences on attendance were the lecturer's teaching ability (n=51, 40%), type of lecture *e.g.* interactive (n=33, 26%) and presence of an attendance register (n=28, 22%). Strategies to make attending lectures easier for students included: reducing large gaps between lectures (n=62, 48%) and later starts to the day (n=34, 26%).

Conclusion: This study identified factors influencing lecture attendance and strategies to improve lecture attendance.

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ERP22. Longitudinal changes in autonomous and controlled motivation of pharmacists in the Dutch continuing education system

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Keywords: Continuing Education, Motivation, Longitudinal Studies

Background: Pharmacists' motivation for Continuing Education (CE) and Continuing Professional Development (CPD) plays a pivotal role in the quality of learning outcomes and patient care. Autonomous motivation (AM) − in contrast to controlled motivation (CM) − is associated with deep learning, better learning outcomes, and less likely leads to burnout (Tjin A Tsoi *et al*., 2016). By understanding the dynamics of motivation a CE/CPD system might be designed that ideally fosters autonomous motivation.

Aim: The aim of this study was to follow longitudinal changes in motivation of pharmacists, participating in the Dutch CE/CPD-system during a two-year period (2013-2015).

Method: AM and CM was measured at three time points (0, 9 and 21 months) using 5-point Likert scales from the Academic Motivation Scale and Relative Autonomous Motivation (RAM) was calculated from the sub-scales (Tjin A Tsoi *et al*., 2016). Latent Growth Modelling was used to analyse the data.

Results: AM (3.35 ± 0.55) increased over 21 months (slope = 0.071 ± 0.031 per year), but CM (1.87 ± 0.64) increased more steeply (slope = 0.194 ± 0.035 per year). As a consequence, RAM decreased over time. Traineeship was the only factor, which significantly influenced the change in motivation. No subgroups with different developmental trajectories could be identified.

Conclusion: The RAM of Dutch pharmacists for CE decreased over a 21-month period as a result of a relatively strong increase of CM. Further research is needed to gain a better understanding of the association between pharmacists' motivation and the characteristics of the current CE system.

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ERP23. Development and utilisation of a structured ePortfolio to support attainment of pharmacy practice competencies

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Keywords: Portfolio Assessment, Reflection, Self-Directed Learning, Student Evaluation

Objective: To facilitate students' demonstration of their achievement of threshold and advanced competencies by mapping their learning activities in a structured ePortfolio.

Design: The shift towards structured frameworks for demonstrating pharmacy competency affords an opportunity to focus student thinking on their threshold and advanced-level practitioner competencies (Coombes *et al*., 2012; Lucas, 2016). ePortfolio design technologies offer a structured environment to evidence competence. A structured ePortfolio template mirroring Australian competency frameworks will be provided to students, aiming to improve their skills in reflecting on, presenting and evidencing their competence (Coombes *et al*., 2012). Evaluation of student outputs will be conducted using a reflective rubric focusing on their self-critique and self-evaluation (Tsingos *et al*., 2015; Lucas, 2016).

Assessment: The success of the project will be gauged utilising data collection: (i) student engagement in the task; (ii) feedback from formal evaluation surveys, (iii) feedback from student focus groups and (iv) feedback from prospective employers.

Conclusion: A structured ePortfolio has the potential to be utilised as an effective tool for presenting their own competence to prospective employers, and for mapping their future learning for the attainment of advanced competency.

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ERP24. Exploring the experiences and agential behaviours of pharmacy students identifying as under-represented racial minorities

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Keywords: Diversity, Underrepresentation, Minority Students, Pharmacy

Background: This study explores the social and academic experiences of students identifying as underrepresented racial minorities (URMs) in pharmacy and the strategic actions (*i.e.* agentic behaviours) they take to navigate towards degree completion. To better understand the experiences of this population, the study will draw from Harper's anti-deficit approach, Weidman *et al.*'s conceptualisation of the graduate and professional student socialisation process, and O'Meara *et al*.'s notions of agency.

Aims: The following research questions guide this study:

(1) How do URM Pharm.D candidates make meaning of their social and academic experiences?

(2) How do URM Pharm.D candidates take action to navigate the college of pharmacy environment toward degree completion?

Method: A qualitative approach will be used to obtain the rich detail needed to explore the participants' lived experiences. Interviews will serve as the primary form of data collection. Data collected through interviews will be analysed using a thematic analysis approach.

Results: Data collection and analysis will occur in Spring 2017. Findings are expected to reflect the participants' experiences regarding the institutional climate, and that of the college of pharmacy (*e.g.* peers, expectations, *etc.*), and the strategic actions they employed to navigate the environment.

Conclusion: Diversity is fundamental to academic institutional advancement, the preparation of health science professionals, and the provision of safe and effective patient care. This work sheds light on the need to increase the research concerning URM students in pharmacy and contributes to the limited published research, nationally and globally, regarding the experiences of diverse students in pharmacy.

Note: This study is funded by AACP's New Investigator Award.

ERP25. Evaluation of how interactions with real-life patients impacts on Year 3 M.Pharm students' confidence in conducting patient consultations

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Keywords: Pharmacy, Communication, Patients, Counselling

Background: In the UK, the General Pharmaceutical Council (GPhC) standards for the initial training and education of pharmacists emphasises the importance of patient contact, stating for example that undergraduate students should have practical experience of working with patients and show how they can establish and maintain patient relationships while identifying patients' desired health outcomes and priorities (GPhC, 2011).

Aims: The aim was to evaluate if contact with actual patients would improve pharmacy students' confidence in conducting patient consultations. This included their confidence in communicating with patients about their condition and illness, as well as eliciting patients' beliefs and values about their health, illness and treatment.

Method: The project involved Year 3 M.Pharm students in the 2014-15 academic year. At the beginning of the year, all students in the cohort were asked to complete a questionnaire relating to their confidence in different aspects of a patient consultations (see Table I). Thirty students volunteered to undertake the next part of the project which involved two meetings with volunteer patients and a workshop on communication skills. At the end of the academic year, all students in the cohort were asked again to complete the questionnaire.

Results: There was an increase in confidence for all students; however the students who took part in the pilot showed a greater improvement in confidence in questions 2,4,8 and 9 (see Table I).

Conclusion: Interactions with real-life patients may help to improve confidence in information gathering but may not impact on other aspects of communication skills such as setting up and closing a conversation.

Table I: Questions on student confidence questionnaire. Students were asked to mark on the scale of 0 (no confidence) to 10 (complete confidence) their level of confidence for each question

	Question	Average improvement in confidence score (%)	
		Students who met with volunteer patients	Students who did NOT meet with volunteer patients
1	Explaining the purpose of the consultation to a patient e.g. giving a clear and concise description of the purpose of the consultation, including what is involved.	7	11
2	Establishing what the patient would like from the consultation	10	4
3	Establishing the patient's understanding of their health or medical condition	12	10
4	Establishing the patient's understanding of their medication or treatment (including non-pharmacological management)	8	2
5	Actively listening to a patient during a consultation e.g. not interrupting the patient, picking up on verbal and non-verbal cues	10	11
6	Developing rapport and showing interest in the patient	9	12
7	Being able to empathise with the patient e.g. recognising, understanding and relating to how the patient feels	10	9
8	Using open and closed questions appropriately during a consultation	13	3
9	Inviting the patient to share ideas and concerns about their health and/or medicines	17	14
10	Closing the consultation in a professional manner	4	9

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ERP26. Identifying the Gaps in CPD to provide opportunity for enhanced workforce development. Collaboration between pharmacy professional bodies in Japan and Great Britain

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Keywords: International Co-operation, Professional Development

Background: The Royal Pharmaceutical Society (RPS) of Great Britain (GB) and Japan Pharmaceutical Association (JPA) have been working in collaboration since September 2015 with the shared aim to improve national health of both countries through enhanced continuing professional development (CPD) alongside a review of shared health policies. Collaborative programmes to improve CPD systems for workforce development in both nations have been evaluated.

Aims: To engage with association members to disseminate this collaboration and develop the understanding about the impact of the international collaboration to pharmacy workforce development and pharmaceutical care delivery.

Method: A cross national workshop was conducted in Japan between the RPS and JPA. Participants involving professional roles and CPD system in Japan were purposively sampled from the JPA network. The CPD systems required in Japan were suggested through the FIPEd Needs-based Education model (FIP, 2013). The data were analysed qualitatively.

Results: Thirty-seven Japanese pharmacy practitioners from all sectors participated in the workshop. The workshop suggested areas for improvement to make more effective CPD system in terms of the infrastructure of and access to systems in Japan.

Conclusion: The workshop suggested health needs, required services, and CPD needs and gaps.

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ERP27. Can illness become wellness when we replaces I: exploring inter-professional interactions in primary care to develop IPE

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Keywords: Inter-professional Relationship, Pharmacy, Qualitative Research

Background: Effective multi-professional teamwork is recognised as essential in achieving optimal health outcomes. Arguably, community pharmacy has largely been a uni-professional venture. However, with a shift in focus to more patient-facing clinical services, the need to interact directly with other healthcare professionals (HCPs) has become increasingly important. Preparing the pharmacy workforce for such inter-professional working is essential. Inter-professional Education (IPE), a compulsory component of the UK M.Pharm, is a powerful tool that can remove professional barriers (Parsell & Bligh, 1998). In designing effective undergraduate primary care focussed IPE it is important to understand the inter-professional interactions taking place within the sector to ensure IPE is authentic and reflective of practice.

Aims: This project aimed to understand the inter-professional interactions that take place between community pharmacists and other HCPs in the primary care setting in order to develop effective undergraduate IPE.

Method: Purposive, snowball sampling was used to recruit community pharmacists. Semi-structured interviews (15 to date) were conducted with participants. Inductive thematic analysis was used to develop themes.

Results: Whilst this work is ongoing, several preliminary themes have emerged: (i) Problem solving pharmaceutical care issues; (ii) Learning from HCPs; (iii) Managing medicines stock issues; (iv) Building relationships, and (v) Access to HCPs.

Conclusion: From this preliminary data, it is clear there are significant opportunities for inter-professional working in the community setting which may be supported through early and effective IPE.

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ERP28. Views on a blended learning approach and preference of learning style: Interim findings from a study among pharmacy students

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Keywords: Blended Learning

Background: A hybrid environment of 'blended learning' (BL) combines online resources of e-learning and traditional didactic learning environments. This approach was used aligned to Twigg's Replacement Model (Kolb, 1986) for integrating e-learning to redevelop the delivery of Pharmacy Law material in Level 2 of the undergraduate Masters of Pharmacy programme.

Aim: The overall aim of this study is to investigate the feedback from learners and impact of the BL approach to teaching pharmacy law to Level 2 pharmacy students.

Method: A mixed methods study collected students' views on the BL approach, and will explore the impact on student performance at two summative assessments. After the delivery of the Pharmacy Law material, the students (n=69) were administered the Kolb Learning Style Inventory (KSI) (Swan *et al*., 2008) to record students' preferred learning style and the Community of Inquiry Survey (CoIS), which measures the Social, Teaching and Cognitive presence of online learning experiences.

Results: Positive correlation was found between Theorist and Pragmatist ($r = 0.621$, $p<0.001$); and between Theorist and Reflector ($r = 0.400$, $p=0.004$) style preference. The average ranking was 3.6 ± 0.7; 3.6 ± 0.6 and 3.3 ± 0.7 for Teaching, Social and Cognitive presence.

Conclusion: Reflective and Theorist are dominant learning styles in this cohort and all components of the CoIS scored quite neutrally. Qualitative analysis from the planned focus groups will explore more in-depth the CoIS data, and impact on performance will be considered at the summative assessment.

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Table I: The preferred learning styles of students (n=51, response rate 73.9%)

Learning style	Student ranking (%)		
	Low	Medium	High
Activist	33	43	24
Reflector	10	27	63
Theorist	17	21	63
Pragmatist	49	31	20

ERP29. Who graduates from pharmacy distance education - experiences from northern Sweden

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Keywords: Pharmacy, Distance Education, Graduates

Background: As a response to the shortages of pharmacists in northern Sweden, an online Bachelor of Science in Pharmacy programme started at Umeå University in 2003. In 2010, a Master's programme was introduced. The programmes are web-based and education is conducted through a virtual learning environment.

Aims: The aim of this study was to describe the characteristics of the pharmacy graduates since the programme inception, and investigate if the programme has addressed the shortage of pharmacists in northern Sweden.

Method: A cross-sectional survey was conducted and distributed to all graduates (n=511) from both pharmacy programmes between 2006 and 2014. Descriptive statistics were used to summarise the data; frequencies and proportions were calculated.

Results: The survey was completed by 222 of 511graduates. Of these 95% were females, 79% were Swedish born and 47% lived in northern Sweden. The average age was 37.9 years. The majority were employed in community pharmacies (85%) and worked full-time (71%). Those who graduated 2006-2010 were more likely to live in northern Sweden compared to those who graduated 2011-2014 ($p<0.05$).

Conclusion: The original organisation of the programme with strategic local study groups in northern Sweden in combination with a web-based approach was likely to attract students in this part of the country. The results indicate that the graduates stayed in northern Sweden even after graduation, potentially addressing the shortage of pharmacist in this region. In line with previous research, this study showed that distance education students are on average older and more likely to be females.

ERP30. Entrustable Professional Activities (EPA) - A role in UK pharmacy education

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Keywords: Competency Based Education, Pharmacy

Background: Entrustable Professional Activities (EPA) are used to define and assess practice in healthcare. EPA describe professional activities and the level of appropriate supervision required at which the learner is trusted (Pittenger, 2016). Recent drives to increase practice-based learning in UK M.Pharm undergraduate courses provide educators with an opportunity to use EPA in a structured way to maximise opportunities to apply skills in practice settings.

Aims: To review the type and level of activities undertaken by students on undergraduate practice placements and explore their views on the introduction of EPA.

Method: Third year undergraduate M.Pharm students who had undertaken a community practice placement completed an online questionnaire to determine the range of activities undertaken, the level of supervision required for each activity and their views on EPA.

Results: Students described a range of activities undertaken on placement and under varying levels of supervision which were often inconsistent with their own perceived levels of competence. Influencing factors included the nature of the task and the type of employer. All students thought their experience would have been enhanced if EPA were in place including increased opportunities to undertake activities, clearer perception of their competence and clarity when levels of trust are defined.

Conclusion: Undergraduate placement experience is variable and there is an opportunity to introduce EPA to allow for a more standardised development of skills in practice, to develop competency based education and support enhanced curriculum integration.

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ERP31. Pharmacy Leadership and Management module: An evaluation of the student experience and its perceived usefulness for future employment

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Keywords: Simulation, Practice Teaching, Leadership, Management, Experiential Learning

Background: Pharmacy Leadership and Management is a 12-day, final-year synoptic experiential learning simulation. Student teams of six run a primary care-based pharmacy business and are presented with approximately 180 scenarios and over 400 medicines-based exercises. This module is based on the successful model created by the GIMMICS consortia of universities.

Aims: To evaluate the acceptability and perceived usefulness to students and their future employment

Method: An online 82-item questionnaire was sent to all 221 students on the module comprising open and closed questions about their module experiences. Two reminders were sent. Analysis consisted of frequency counts and percentages.

Results: Sixty-five percent of students completed the survey (n=143). Ninety-two percent said the module challenged them (n=132/143). Eighty-nine percent said it made them more confident talking to patients (n=127/143); 84% reported that their team-working skills improved as the module progressed (n=110/131). Eighty-nine percent of students stated that they thought the module consolidated their learning across the degree (n=117/131). Despite the nature of the module, over half felt that the business skills would not be useful to their future career (55%, n=71/131).

Conclusion: This new module has assisted students to develop themselves by challenging them and assisting to consolidate their team-working skills. Despite the importance of understanding business and management, students still appear to lack appreciation of this topic, perhaps due to lack of practice exposure in the course. This is the first year the module has run and we will be following up with the now recent graduates to evaluate the module impact on the next stages of their career.

ERP32. Training programmes to enhance global pharmacy practice

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Keywords: Training, Worldwide Approach, Pharmacy

Background: There is an increasing desire for advancing pharmacy education worldwide to better prepare practice-ready graduates who can meet societal needs by providing patient-centred pharmacy care (PCPC) (Manasse, 2012).

Aims: The University of Colorado Skaggs School of Pharmacy is engaging with individual pharmacists, clinical centres and pharmacy schools worldwide to provide more clinically-oriented education and training to help advance pharmacy practice in all patient care settings from community-based care to specialty care.

Method: We provide two training options: 1) individualised and group train-the-trainer programmes to enhance the clinical expertise of those that will serve as clinical trainers; 2) partnerships with pharmacy institutions to develop state of the art pharmacy degree programmes, training programmes and clinical sites for students from both institutions.

Results: Our train-the-trainer programmes have had a broad reach as we have hosted academics and clinical trainers from Nigeria, Ghana, France, Singapore, United Kingdom, Turkey, China and Egypt which has resulted in advances in clinical practices (see Table I column A). Our collaborations with institutions in Egypt, Turkey, India, the Netherlands, Guatemala and Ireland have led to shared scholarly activity (see Table column B)

Conclusion: The global pharmacy community's desire to advance pharmacy practice through enhanced clinical education and training is a valuable and achievable goal. Our education and training programmes continue to be successful to assisting our international partners make progress towards meeting this goal.

Table I

Train-the-trainer clinical practice advances	Institutional shared scholarly activity
✓ implementation of an antibiotic stewardship programme in an academic hospital ✓ a medication safety programme in a regional hospital ✓ advanced clinical pharmacy services in hospital ✓ development of a pharmacist run neurology clinic ✓ development of a student clinical experience portfolio ✓ provision of patient-centered communications and pharmacotherapy education to pharmacy students.	✓ Goulooze SC, Franson K, Cohen AF, Rissmann R. Undergraduate electives in clinical Pharmacology at the interface of Academia and industry. Clinical Therapeutics 2015:37(8), Supplement e96–e97 ✓ Malhotra JV, Trujillo JM, Yesilada A, Gencer M, Franson KL. International Rubric Norming for Patient-Centered Communication Skills. Federation of International Pharmacists, Dusseldorf, Germany 2015 ✓ Abunahlah N, Saseen JJ, Franson K, Yesilada A. Inclusion of Interactive Clinical Case Studies to promote patient-centered care in a Pharmacotherapy Course in Istanbul Kemerburgaz University. Federation of International Pharmacists, Dusseldorf, Germany 2015

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ERP33. Student engagement with a flipped classroom teaching design affects pharmacology examination performance in a manner dependent on question type

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Keywords: Problem Solving Examination Performance, Flipped Classroom

Background: In the current intervention, a strategic, sequential teaching design was implemented and students' performance on examination questions involving novel scenarios was evaluated.

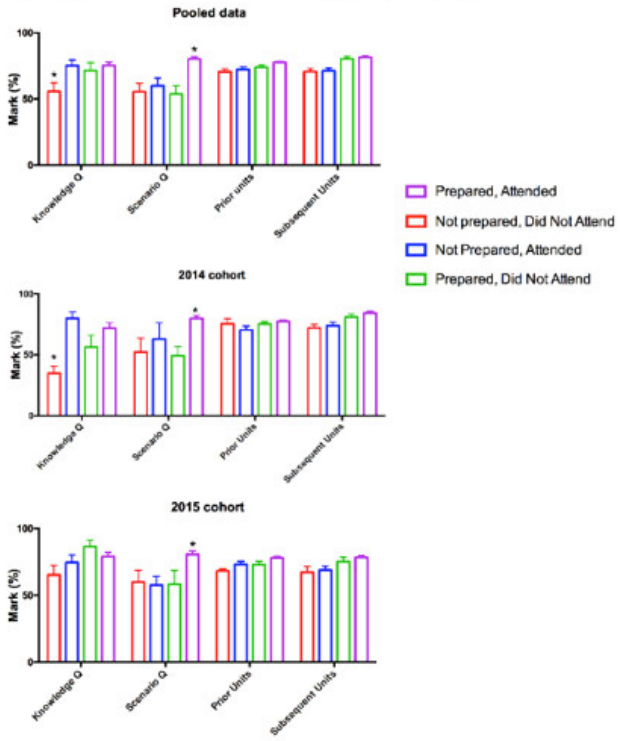
Aims: We attempted to determine whether engagement with a flipped classroom problem solving teaching design differentially predicted student performance on questions requiring knowledge acquisition compared to questions requiring solutions to novel problems.

Methods: This study correlated student engagement with the flipped classroom and student disposition to learning with student ability to solve novel scenarios in examinations.

Results: Students who both prepared and attended performed significantly better (at least 1.3 SD higher) than all other students on examination questions that required analysis of novel scenarios, but not on questions that required knowledge and understanding. Student motivation and use of strategies correlated with higher examination scores on questions requiring novel scenario analysis.

Conclusions: Our results suggest a synergistic relationship between class preparation and attendance. We report that the combination of preparation and attendance was positively related to assessment type; the relationship was apparent for questions requiring students to solve novel problems but not for questions requiring knowledge or understanding.

Figure 1: Performance on examination questions by engagement category. Values shown are mean (SD) percentage mark for each type of examination question.



*indicates a significant difference compared to all other binned categories of preparation and attendance within that assessment type (two way ANOVA, $p>0$ 01)

ERP34. Using beta2 agonists to integrate learning of chemistry, pharmacology, formulation, drug delivery, clinical and practice elements of an undergraduate degree

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Background: To further integrate science and practice teaching within the Cardiff M.Pharm, a new workshop was designed. The three hour sessions, facilitated by a chemist and pharmacist, required Year 2 students to work in groups. Using beta2 agonists as the focus, chemistry, pharmacology, formulation, drug delivery, clinical and practice elements were included.

Aim: To evaluate student views on the workshop.

Method: At the end of each session students completed anonymously a standard school teaching evaluation form containing eight Likert questions (a) (1=strongly disagree to 5=strongly agree). Open response questions asked for positive aspects and suggestions for change. Ethical approval was not needed for this evaluation.

Results: Ninety out of ninty-nine completed evaluations were received (91% response). Mean Likert responses (a) were: spoke clearly (4.7/5), good at explaining things (4.5), made subject interesting (4.1), enthusiastic (4.6), intellectually stimulating (4.4), related material to a pharmacy context (4.6), materials were easy to read (4.5) and maintained interest throughout (4.0). The aspects listed as most positive following content analysis of open question responses were workshop/workbook structure (n=51), integration/links between topics (n=30), relevance to a pharmacy context (n=18). Suggestions for improvement were shortening session (n=26), making paper copies of slides available in session (n=5), having another member of staff (n=3).

Conclusion: Students found the workshops useful in several ways including workshop integrated material from several modules and the relevance to pharmacy, For example, one student wrote: "*Practising mechanisms. Clear understanding of adrenoceptors. Good source of revision. Links loads of topics together*". The session will be modified and reduced to two hours for 2016/17.

Apart from the skills reported (Table I), the most useful elements were: tutoring in-house with feedback, face-to-face lectures with clinical specialists, specialist rotation/ lectures, peer support. Conversely, the number of assignments/workload were considered excessive. Nevertheless, 92% would recommend the course to other pharmacists.

Conclusion: In an era of specialisation, our course is achieving its' aim of equipping graduates for advanced/ leadership, clinical and non-clinical roles in our hospitals.

Table I: Skills attained

Skills	Very Useful	Useful
Oral presentation	85%	15%
Clinical	69%	27%
Research/Writing	62%	27-35%
Organisation/Professional/Problem-solving	42-46%	46-50%
Communication	31%	62%
Teamwork	12%	69%
Management/Leadership	4-8%	50-54%

ERP35. Is a broad-based postgraduate course suitable for training hospital pharmacists for advanced and leadership roles?

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Background: The M.Sc. in Hospital Pharmacy is a taught, broad-based course that aims "to train and produce ... individuals who will lead our profession in both clinical and non-clinical roles, working in collaboration with other healthcare professionals".

Aims: To determine if the M.Sc. course prepares graduates for more advanced and leadership roles in hospital pharmacy.

Method: A survey link was emailed to 38 graduates from 2006-2013 (Survey Monkey) with a mixture of ten open and closed questions.

Results: The response rate was 68% and 100% of respondents had remained in hospital or related posts with over 80% now in a more senior role. Sixty-five percent were working in clinical roles, and the remainder in non-clinical or combined clinical/non-clinical roles - aseptic production, clinical trials, medicines information and formulary/guideline development. Almost all felt the course had a medium-high impact on their confidence dealing with other professionals (96%) and on their overall job satisfaction (92%).

Ninety-two percent agreed/strongly agreed the broad-based content was useful when considering future career options and that the course had a medium-high impact on their attaining promotion (93%).

ERP36. Using Team-Based Learning to enhance curriculum integration

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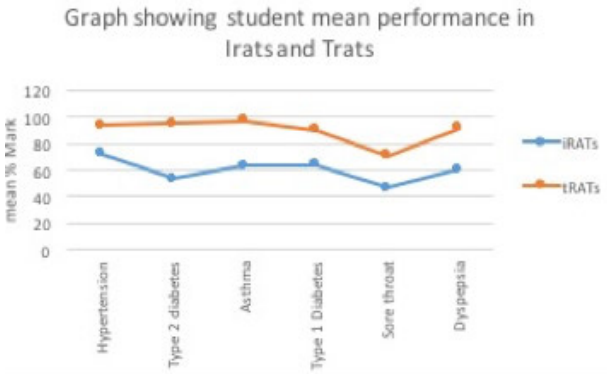
Keywords: Team-based Learning, Team Readiness Assurance Test, Learning, Individual Readiness Assurance Test, Integration

Background: With the explosion of scientific knowledge resulting in limited meaningful learning by millennial students, we have designed dynamic student-centred experiences that engage our learners in deep thinking in a team-based learning (TBL) environment.

Aim: To use team based learning to enhance curriculum integration

Method: Faculty developed harmonised multiple choice questions (MCQ) questions involving clinical practice, chemistry and biological sciences for six clinical cases. First year pharmacy students were divided into mixed ability teams of five. Learning resources were provided a week prior TBL sessions which started with individual readiness assurance tests (iRATs). The tests were retaken within teams (tRATs) and scored using the 'Immediate Feedback Assessment Technique' (IF-AT). Students engaged in spirited discussions about the correct answers to questions. The IF-AT provided immediate affirmative and corrective feedback. If the selected 'answer' was incorrect, they chose again until they got it right. Individual and team performances were analysed and student feedback sought.

Results: The average cohort tRATs score (mean ± SD) was significantly higher at 89.7 ± 16% than mean iRAT scores of 60 ± 11% (p<0.05), suggesting that harmonised learning is enhanced when it is team based. Student comments were positive about the readiness assurance process: "*Improved my learning a lot*", "*Good to get to know new people and be taught by different professors*", "*It's a great idea and has really assisted my learning*".



Conclusion: Deliberately integrating pharmacy disciplines through the process of harmonisation (Harden's Ladder) in a TBL environment enhances students' knowledge and improves contextualisation of learning.

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Teaching Innovation Posters

TIP1. Developing a patient-facing placement in a General Practitioner practice to apply an Entrustable Professional Activity model

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Keywords: Student Placement, Creative Teaching, Peer Teaching

Objective: Entrustable Professional Activities (EPAs) are a means to translate competencies into clinical practice and underpin competency-based education in healthcare. EPAs are units of professional practice or descriptors of work, defined as specific tasks or responsibilities that trainees are entrusted to perform without direct supervision once they have attained sufficient competence (Haines *et al*,. *in press*). We aimed to develop a placement whereby final year undergraduate pharmacy students would perform supporting tasks with reactive supervision (EPA level 3) to contribute to three EPAs as defined by Haines *et al*. (*in press*): a) Collect Information to identify patients' medication-related problems and health-related needs, b) Analyse information to determine effects of medication therapy, and prioritise health-related needs, and c) Implement a care-plan in collaboration with the patient.

Design: Following piloting and evaluation, a patient-facing clinic in a General Practice (GP) surgery was integrated into the Year 4 M.Pharm curriculum in 2016-17. The students captured information on patients' metrics, lifestyle monitoring and full medical and medication history using a custom data entry tool on the clinical database of the GP software; following analysis of this information, any recommendations they made were also recorded.

Assessment: Feedback was provided by an observer student using a peer-assessment form, including a checklist and a global assessment based on those used for Objective Structured Clinical Examinations. Students also used a reflective tool to self-evaluate their experiences.

Conclusion: Feedback demonstrates that this new clinic-style placement can support students to conduct EPAs.

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TIP2. The development of a multi-pronged training approach to enable pharmacists prepare for ePortfolio review submissions

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Objective: The Irish Institute of Pharmacy (IIOP) is responsible for the implementation of a new CPD system in Ireland. One aspect of the new system is the introduction of an ePortfolio review process, where pharmacists are randomly selected annually to submit an extract of their ePortfolio for review. This presentation outlines the range of approaches taken by the IIOP to provide guidance to pharmacists who are called for review.

Design: A multi-pronged approach was used to develop a suite of support materials in an effort to facilitate a wide range of learning preferences, including face-to-face

training sessions, webinars and online resources, including interactive training modules, written resources presented as PDFs and training videos. Pharmacists self-select the approaches best suited to them. A pilot process with 130 pharmacists was used to test, pilot and receive feedback on the resources, before developing the support materials for the live process.

Assessment: Feedback was sought from participants during the pilot process in the form of evaluation questionnaires, which were facilitated independently of the IIOP by the Quality Enhancement Office of Royal College of Surgeons Ireland. This feedback, combined with informal feedback, was used to further develop the materials for the first practice review process, which was completed in May 2017. Evaluations of these materials were also sought.

Conclusion: Insights into pharmacists' preferences for learning have been gained through this work. It is clear that there is a variety in the requirements of pharmacists, and the provision of support through a range of modalities remains an important part of the IIOP approach to supporting pharmacists.

TIP3. When e-learning replaces the classroom: lessons learned during the development process of an online biotechnology course

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Keywords: Online Learning, Course Organisation, Design

Objective: To share experience with transferring an introductory Pharmaceutical Biotechnology course from a classroom setting to an interactive online learning environment.

Design: An existing biotechnology course (advanced bachelor) was transferred to an online format to facilitate flexibility of studying, in addition to offering the course to professional pharmacists as a continuous education option. Course design is structured around the development trajectory for successful registration of a novel biosimilar, and introduces students to product definition, manufacturing, processing, quality/safety and registration requirements. The online environment accommodates asynchronous interaction, a 24/7 log-in option, a clear overview of deadlines, progress and remaining learning activities that can be completed sequentially or in parallel. We used different learning tools to accommodate different learning preferences: text reading, short web lectures, (multiple choice) questions, statements, discussion groups, wikis, polls, *etc*.

Assessment: The e-course was evaluated by 20+ regular pharmacy students that were asked to indicate what they "liked about the course" and "what could be improved". Students very much appreciated the interactive learning, the diversity of learning tools, and the timing flexibility. They suggested creating smaller groups for some assignments and a lowering of study load.

Conclusion: For an online course to be successful, it is important to keep leaning activities short with clear objectives, explicit instructions and deadlines. Regular and frequent online feedback from course tutors on student performance is necessary to maintain motivation and active course participation.

Acknowledgement: This project was supported by the Lifelong Learning Program (www.phar-in.eu) of the European Commission.

TIP4. The academic pharmacist as patient. Evaluating a medication history taking session for final year pharmacy students

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Objective: To design and evaluate a new patient consultation learning session where a member of academic faculty was the patient.

Design: UK schools of pharmacy are using a range of innovative approaches to increase opportunities for M.Pharm students to interact with patients. An academic pharmacist as patient participated in a series of 30 minute consultations with three-four students. Prior to the session students were provided with a list of regular medication (name, form, strength, frequency). During consultations students took a full medicines history and dealt with issues. Students completed anonymously an evaluation Staff observers (n=4) were asked for their comments.

Assessment: A total of 103/124 completed forms were returned (83%). Students indicated that the following elements were covered: consent (100%), confidentiality (100%), feedback on improving asking patients questions (100%), medicines-history taking (100%), patient adherence (99%), monitoring for efficacy/side-effects (99%), risks of cutting tablets (99%), off-label use and informing patient (98%), dose adjustment in response to side-effects/efficacy (98%), when to discuss drug-drug interactions with patient/prescriber (97%), identification of meaningful CPD (95%). Valuable elements included: preparation for OSCEs, talking to an informed patient, off-label use, tailoring of medicines in response to efficacy/side-effects, realistic consultation, small groups allowing participation of all & receiving helpful, constructive feedback. Peer feedback included use of clear learning outcomes building on previous learning,

alignment of learning with assessment (OSCE), student engagement/enjoyment, relevance to pharmacy and the safe but realistic learning environment.

Conclusion: Student and staff feedback indicated the session was valuable in several ways.

TIP5. Use of flipped-classroom and team-based learning in the delivery of Year 3 integrated therapeutics workshops

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Keywords: Pharmacy, Technology Uses in Education, Teaching Methods, Blended Learning, Teamwork

Objective: To increase student engagement with integrated therapeutic workshops by introducing the use of flipped-classroom and team-based learning, with which other schools of pharmacy have demonstrated positive results. Integration in this context is bringing together content from different disciplines and applying it to clinical case(s).

Design: Two three-hour workshops based on a patient with cystic fibrosis were developed using the flipped-classroom approach. Pre-work was provided in the form of recorded lectures. In workshop one, this was assessed at the beginning in the form of a team quiz using a voting response system. In workshop two this was developed further by adding quizzes at the end of each part of the case. The quizzes relied on students having completed and understood the questions that had been set for the relevant part of the case, which maintained engagement and provided ongoing feedback about their understanding.

Assessment: Student feedback included "*helpful to go through the lecture at my own pace, found quiz an effective form of learning, helped to put pre-work into context*"; "*group quiz- good interactive idea, allows us to work with each other to understand pre-work"*; "*liked the MCQ to help gauge our understanding. The competitive aspect helped to answer the questions*", "*pre-work for workshop two too long*", "*three hours is too long*". Positive feedback has been received from staff, as well as a General Pharmaceutical Council (GPhC) interim accreditation panel who observed workshop two.

Conclusion: Length of workshops and pre-work needs to be considered, however overall the workshops were well received by staff, and students reported a preference for this style of workshop. Feedback will be requested next year to take into account different learning styles of different cohorts.

TIP6. Eliminating pharmacy borders through an international inter-professional APPE rotation site in rural Guatemala

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Keywords: International Education, International Educational Exchange, Global Education, International Relations, Experiential Learning

Objective: Develop and implement an inter-professional APPE rotation site in rural Guatemala.

Design: The World Health Organisation's Inter-professional Practice Framework addresses the global shortage of healthcare workers by embracing inter-professional patient care models. Through a unique partnership between the Guatemala Bolaños Foundation and University of Colorado a low-cost inter-professional healthcare clinic was developed. Pharmacy faculty and administrators visited the clinic to identify needs and APPE rotation opportunities. The APPE rotation was developed to include pharmacy distribution activities, patient/technician/provider/community education, and clinical pharmacy services. Pharmacy faculty served as primary preceptors along with a local Guatemalan pharmacist, medical residents, and clinic directors. Pharmacy faculty were available remotely to answer pharmacy related questions and assist with clinical pharmacy visits.

Assessment: Four APPE students completed the Guatemala rotation between 2015-2016. Of the 442 interventions recommended, 76% (336/442) were accepted. Fourteen student specific projects were completed during the four student rotations. Students provided training and education to the full-time pharmacy technician and used a train-the-trainer method to provide education to the community nurses who then provided this education to the community. Pharmacy involvement at the clinic has led to a recent partnership with San Carlos University Faculty of Pharmacy with a goal to integrate CU and San Carlos students at the clinic and in the local hospital.

Conclusions: The University of Colorado Skaggs School of Pharmacy's APPE rotation in Guatemala meets the needs of underserved populations, establishes effectiveness of distance precepting by pharmacy faculty and provides international inter-professional opportunities for fourth year pharmacy students.

TIP7. The Healthy Living Pharmacy community of practice

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Keywords: Pharmacy

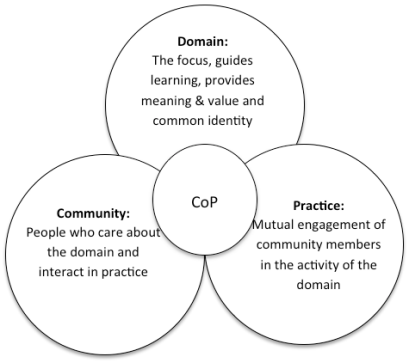
Objective: Healthy Living Champion's (HLCs) contribution has been recognised as a key facilitator in the enhanced uptake and delivery of community pharmacy services through the Healthy Living Pharmacy (HLP) project. HLCs have cited their networking opportunities as the source of their motivation and professional development.

Aims: To explore the influence attending HLC meetings has on the HLC role.

Method: Focus groups were employed to interview the HLCs employed in the city's community pharmacies. The interview schedule was created iteratively based on the literature relating to communities of practice (CoP).

Results: Twenty of the 33 HLCs participated in two focus groups. An inductive approach to the qualitative analysis identified the three characteristics described to comprise a CoP (Lave & Wenger, 1991)(Figure 1). Furthermore, the HLCs described the collaborative learning opportunities, sharing personal practice and regular interaction afforded by the HLCs meetings, enhanced their professional practice and improved their confidence in performing their role.

Figure 1 : The three inter-related key elements of a community of practice



Conclusion: CoPs have gained recognition in the business sector for improving organisational performance through the sharing of tacit knowledge, sparking innovation, reducing the learning curve for new staff and as a means of creating social capital. This study demonstrates the potential for CoP to contribute similar benefits for members of the pharmacy profession.

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TIP8. Embedding problem solving and decision making skills in the pharmacy workforce to improve patient care

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Keywords: Problem Solving, Decision Making, Improve Patient Care

Background: Pharmacy professionals need to problem solve and make decisions effectively to ensure they become an essential member of the multi-disciplinary team providing pharmaceutical care. A skills-based workshop was developed comprising interactive non-pharmacy based activities designed to get the participants to experience key learning points, discussions on problem solving and decision making theories and activities designed to embed the learning into practice.

Aims: To explore the pharmacy professionals' perceptions of the impact of the problem solving and decision making workshop on their knowledge and confidence in practice.

Methods: All participants were asked to complete a questionnaire after they had completed a pre-course activity, attended the workshop and completed a post-course activity to ascertain any perceived change in knowledge or confidence in problem solving and decision making, as well as any intention to change practice after completion of the training.

Results: All the pharmacy professionals who participated in the workshop completed the questionnaire (n =16). A reported change in knowledge of problem solving and decision making was reported by 100% of the respondents and a change in confidence in their ability to use the skills and techniques covered in the workshop was reported by 81%. Following completion of the workshop 100% of the respondents stated that they had learnt something new and intended to do something differently back in practice. The most popular change in practice was to categorise and analyse problems in detail before using decision making tools to implement a solution.

Conclusions: The skills based workshop was effective in increasing the participant's knowledge and confidence to implement the problem solving and decision making tools in practice.

TIP9. The impact of incorporating group teaching into a pharmacist pre-registration training curriculum

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Keywords: Peer Teaching, Learning Experience, Teacher-Student Interaction, Teaching Experience, Group Experience

Objective: UK pre-registration pharmacists must demonstrate competency in teaching and communication skills, as part of their registration requirements. Additionally, trainees are assessed on topics from all sectors of pharmacy practice. The aim of this study was to evaluate the impact of incorporating peer group teaching of community pharmacy services-related topics, into the hospital-based trainees' curriculum.

Design: Six topics were selected in areas of practice that hospital trainees have limited exposure to (Table I). Each group delivered their session to peer groups (audience/ learners) and two assessors who used an objective mark scheme to assess each session. Two questionnaires were developed to capture each trainee's experiences from either a 'presenter' or an 'audience/learner' perspective. Trainees ranked a set of statements informed by the literature (Bloom, 1984), on a Likert scale. Face validity was established through independent review. The appropriate questionnaires were distributed to 'presenters' and 'learners' at the end of each group teaching session. All responses were anonymised.

Assessment: Descriptive statistics will be used to analyse each statement from both questionnaires and qualitative comments will be collated. A summary of perceived benefits, shortcomings and overall impact of the group teaching approach from both the 'presenters' and 'learners' perspectives will be presented.

Conclusion: The results of this study will provide evidence of the appropriateness of using the group teaching approach on 'targeted' topics during the pre-registration training year.

Table 1. List of Topics and Content of Selected Group Teaching Sessions

Groups	Topic	Content
1c & 2c	Substance Misuse	• Alcohol dependence • Opiate abuse • Smoking
3c & 4c	Emergency Hormonal Contraception (EHC)	• Levonorgestrel • Ulipristal • Intra-uterine Device (IUD)
1b & 2b	Health Checks	• Cardiovascular disease • Type 2 diabetes mellitus • Chronic kidney disease
1a & 2a	Sexually Transmitted Infections (STIs)	• Chlamydia • Gonorrhoea • Syphilis
3a & 4a	Travel Health	• Malaria • Sunburn • Diarrhoea
3b & 4b	Immunisations	• Infants • Children • Young adults
Each topic was allocated to two groups of 6-7 trainees at the start of the training year One hour sessions for each group were time-tabled during residential study weeks		

TIP10. A "Patient as Teacher" scheme for pharmacy students

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Keywords: Patients, Communication Skills, Pharmacy Education

Introduction: A "Patient as Teacher" scheme was introduced into the undergraduate pharmacy curriculum to enable students learn from volunteers in a safe environment. Learning outcomes include demonstration of self-confidence, understanding of a patient's experience of pharmacy and the development of early communication skills. The 1st workshop saw students explore patients' perceptions of pharmacy and their experiences of pharmacy professionals and services.

Design: After viewing videos about appropriate and inappropriate communication and body language, students worked in groups to plan their conversations, covering the patient experience of pharmacy and developing rapport. The groups spent 30 minutes with their patient, participated in a plenary discussion and subsequently completed reflective accounts of their experiences.

Assessment: Feedback was obtained from patients (N = 3) and students (N = 31) who participated. Patients' feedback was very positive; they found the students to be welcoming, confident, demonstrating empathy. Patients could identify students who had previous work experience. They commented that some students would benefit from further developing their questioning style further improving their confidence.

Students indicated that they found the experience of discovering what patients would like from pharmacists very interesting. The openness of the patients was commented upon. Conversations went beyond the set questions, with students learning about the patients' experiences, perspective and opinions, which they had not previously considered.

Conclusion: This initial patient and student contact was very rewarding for all involved. Further 'Patient as Teacher' sessions that build on these initial communication experiences and develop consultation skills are planned.

TIP11. Identifying patients at risk for prevalent diseases: an Entrustable Professional Activity in a community health and lifestyle placement

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Keywords: Placement, Health Promotion, Professional Development

Objective: A novel placement opportunity was developed and piloted, whereby Year 2 M.Pharm students would conduct a health and lifestyle clinic in a Training and Education Community Pharmacy. Students would perform a screening assessment to identify patients at risk for hypertension and diabetes, with the aim to contribute to a range of Entrustable Professional Activities (EPAs) with reactive supervision (EPA level 3) (Haines *et a*l., *in press*).

Design: The students would capture information on blood pressure, height and weight, arm and waist circumference, and lifestyle. Education would be provided to patients using leaflets from the British Heart Foundation on alcohol, diet, smoking cessation and exercise, and discussing application to patient care.

Students would conduct the consultation in pairs: one student would take the lead and interact with the patient, whilst their partner would provide feedback based on a form including a checklist and the global assessment framework used by the School for Objective Structured Communication Exams.

Assessment: Students will complete a reflective account, based on a template including open questions about the perceived value of the placement, barriers and facilitators, and identify professional strengths and weaknesses.

Conclusion: The placement will support students to complete supporting tasks for identifying patients at risk for prevalent disease in a population, educating patients regarding lifestyle and patient care, creating a written plan for continuous professional development.

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TIP12. Are we there yet? Increasing curriculum transparency for university students and staff with MyCourseMap

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Keywords: Curriculum, Course Description, Student Centre, Curriculum Course Selection, Outcome Based Education

Degree structures are often difficult to comprehend and opaque to commencing students due to the complexity of the course information, the unfamiliar discourse, the abundance of information and the non-interactive nature in which subject matter is presented. Imbued with academic culture and language, programmes of study - including details of individual subjects - are often unfamiliar to the majority of those considering tertiary education and first year students. Current students are able to access this information online, but the information frequently lacks detail and is presented such that there is minimal student perception of relevance. Students rarely see a programme-wide view of their studies, and yet their programmes are developed with just such a holistic view. This Australian Teaching Fellowship identified a need to communicate transparent and "visible" curricula to students to enhance first year transition, course retention and successful course completion. The Fellowship will generate conversation around how to better communicate and engage students in their programme of study through the implementation and support of MyCourseMap, a multi-dimensional interactive curriculum map using digital and touch technology that increases transparency and relevance of curricula for students. Clearly defined graduate attributes and programme learning outcomes are essential for producing graduates with the skills necessary to be proficient employees and contributors to society. The Fellowship also aims to increase awareness of the value and importance of graduate attributes for graduate success.

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TIP13. Evaluation of an immersive learning setting for undergraduate pharmacy students' "Healthy Living Pharmacy Live"

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Keywords: Education, Education and Work, Work Readiness

Objective: Work-based learning opportunities are limited within the current pharmacy curriculum. Immersive learning techniques aim to assist the practical application of subject knowledge. Vital integration of learning is done in the mind of the student (Harden, 2000). "Healthy Living Pharmacy Live" (HLPL) was established in January 2016, and built upon the initial programme at University College London. Learning in an immersive, professional setting where consolidation of integrated subject understanding and development of professional skills were prerequisites of this programme.

Design: Four hundred and forty-eight students across all four years of the pharmacy course undertook workshops covering assessment and supply of prescriptions, including controlled drugs; drug-device counselling; provision of brief advice, and provision of services such as Medicines Use Review (MUR) and New Medicines Service (NMS). All sessions were supervised by a pharmacist facilitator. Evening action learning sets were provided for students complementing activities covered by lectures.

Assessment: Analysis of all paper questionnaires is still ongoing and feedback from 95 first year students who attended three, ninety-minute sessions indicated that 93% concluded that they felt more confident in assessing prescriptions; 62% wanted more work-based sessions of this type, and 74% stated that it made a positive impact on their learning experience.

Conclusion: These outcomes demonstrate a greater degree of self-reported confidence in the skills covered in the workshops and preparedness of students for their pharmacist role were identified.

Reference

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TIP14. What does it mean to be a global citizen in the era of Ebola an Zika virus outbreaks?

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Keywords: Teaching Innovation, Global Education, Multidisciplinary Approach, Citizenship, Education, Public Health

Objective: To educate students about the grand challenges facing our planet today, and empower them to become the Global Citizens of tomorrow. The Global Citizenship Programme (GCP) encourages students to: look beyond their individual and local interests; understand the complexity of an interconnected world; and to rise to their social, ethical and political responsibilities.

Design: GCP aligns with the six UCL Grand Challenges themes (see Figure 1). The Global Health Strand "Outbreak" is a free two-week course that focuses on the Ebola and Zika virus and is open to UCL students from all degrees and disciplines. The teaching innovation lies in the multidisciplinary approach and design of the programme. Students learn from experts in different fields ranging from young entrepreneurs to WHO spokespersons, so that each day another perspective is introduced. Thus, students approach problem solving using a multidisciplinary method rooted in virology, anthropology, epidemiology and the use of mathematics in modelling infectious disease dynamics. Students apply their knowledge in workshops during debates and develop technical skills such as film making as learning outputs.

Assessment: Students must meet the 70% attendance requirement in order to be awarded a certificate of completion. The course is open to a max of 125 students who are split into working groups of ten. Each group is allocated an identity *e.g.* African Union, WHO, MSF, *etc.*, and must work together, or in opposition, to develop emergency plans, secure negotiations and develop films. The best short film, as voted by students, is shown at the final reception.

Conclusion: According to feedback, over half of the students who enrolled on the programme reported an improved understanding and identification with global citizenship after completing the course.

Figure 1: The UCL Grand Challenge of Global Health brings together the university's wealth of intellectual capital from across all disciplines, to find innovative, workable solutions to global health problems.

TIP15. Developing skills and confidence of pharmacy students to communicate with adolescents about health and medicines

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Keywords: Teaching Innovation, Communication Skills, Pharmacy, Young Adolescents, Blended Learning

Introduction: Worldwide the prevalence of chronic conditions (*e.g.* diabetes, depression, ADHD, asthma, and arthritis) is rising among adolescents. However, the adolescent perspective on medicines use is often altogether absent from the pharmacy education curriculum. As a result, pharmacy students may lack the specific skills and confidence needed to support adolescent understanding and use of prescribed medication. These communication skills are essential to deliver pharmacy services that are "adolescent friendly" and meet the Department of Health (DH) quality criteria for young people.

Objective: To develop, deliver and evaluate an innovative educational module for pharmacy students in England, the United States (US) and Australia through the PharmAlliance partnership and contribute to the international agenda of achieving "adolescent friendly" services as set out by the WHO.

Design: With the support of PharmAlliance, staff from the three pharmacy schools have collaborated to create a two-lesson module using various teaching and learning strategies: blended learning, online and in-class components through a flipped classroom approach. It includes an international perspective on health needs of young people, barriers and opportunities for pharmacy services, and communication theories. Online material includes an introduction to, and examples of behavioural psychology techniques adapted to improve communication between pharmacists and young people.

Assessment: There is no summative assessment or exam. Students complete a survey before and after the completion of the module to assess their own learning.

Conclusion: The module will be delivered and evaluated on all three campuses this year. We hope to discuss how the module may be incorporated into pharmacy curriculums or continuing education programmes globally in order to improve pharmacy services for young people worldwide.

Reference

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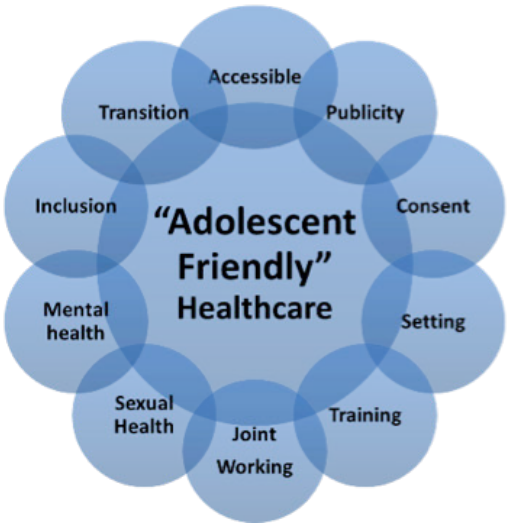
Figure 1: Adapted from the "You're Welcome - Quality criteria for young people friendly health services." (Department of Health, 2011).



TIP16. Development of a Global Health Pharmacy course with a focus on the role of the pharmacist at University of Colorado

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Keywords: International Education, Elective Courses, Global Education

Objective: Create and deliver a global health (GH) elective with a focus on the pharmacist role.

Design: A 2014 survey reported 47% of pharmacy schools offered globally focused classroom material. The majority of classes were inter-professional and organised by non-pharmacy disciplines. There are limited data describing GH curriculum designed specifically for pharmacy students. University of Colorado Skaggs School of Pharmacy faculty collaborated to create a GH course. Course directors used GH course curricula from pharmacy, medical, and public health schools, published literature about GH education, and professional experiences to develop curricular themes for the new GH course.

Assessment: The 16-week GH elective was offered in Autumn 2016 and included didactic content and active learning exercises. Curricular themes were medication access, affordability, adherence, and patient education. Content included global pharmacy education, GH pharmacist role, funding and grant writing, noncommunicable diseases, HIV, tuberculosis leprosy, malaria, viral epidemics, diarrhoea, and travel medicine. Active learning exercises included assessing pharmacy education curriculums worldwide, cover letter writing for a GH pharmacy job, stocking a pharmacy on a budget for a specific region, creation of a public health campaign, and incorporating a pharmacist into the movie Contagion. A longitudinal project required identification of a GH problem, writing a grant for funding, and presenting the proposal in a competition.

Conclusion: There is an urgent need for pharmacists capable of identifying and overcoming barriers to medication in resource poor areas of the world, both locally and globally. This course allows pharmacy students to develop critical thinking and problem-solving skills while gaining GH knowledge.

TIP17. Pilot at UCL School of Pharmacy: To introduce pharmacy undergraduates to the concepts of digital engagement for clinical practice.

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Keywords: Undergraduate Education, Pharmacy Innovation, Teaching, Learning

Objective: To introduce and engage final year undergraduate pharmacy students with the concepts of digital pharmacy.

Teaching: A plenary lecture with an interactive workshop to cover the following learning objectives:

1. Understand the recent developments in healthcare technology across all sectors of pharmacy and an insight in to how pharmacy practice is being impacted by the use of technology, including Electronic prescription service, Summary Care Records, Pharmacy supply chain.
2. Develop an awareness of open source and code4Health as initiatives to promote digital innovation.
3. Understand the broader issues of information governance.
4. Understand how to engage with and get more information about digital medicines initiatives

Design: This pilot has been conducted with final year M.Pharm students at UCL. A plenary lecture and workshop were designed to fulfil the learning objectives. The workshop was designed to have highly interactive elements which included developing a health related app and bringing it to market.

Assessment: At the end of the lecture and workshop, online feedback forms were sent to the students to complete. Students will be examined on the materials covered in their end of year examination in June 2017.

Conclusion: Following the pilot, with support from NHS digital, a digital pharmacy thread will be incorporated into all four years of study at UCL. The design and concepts of this developed thread will be rolled out nationally across all pharmacy schools in the UK.

TIP18. Lifestyle Medicine: Strategies for success in experiential setting

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Keywords: Interdisciplinary Approach, Student Development, Student Experience, Integrated Activities, Adventure Education

Background: Lifestyle medicine is a growing component of pharmacy and inter-professional instruction and clinical experiences. This programme will explore the development, implementation, and evaluation of lifestyle medicine activities in the experiential and inter-professional environments.

Aims: To evaluate the effectiveness of inter-professional education (IPE) during experiential rotations.

Methods: Pharmacy and medicine professional Year 3 and 4 students are paired up to work together to improve students understanding of empathy when counselling a patient on lifestyle medicine. Prior to the student seeing the patient, students were assessed on their knowledge base and prior experience working with healthcare professional students in other disciplines. Following the survey, students are broken into focus groups and each pair would review recommendations for lifestyle modification in patients with diabetes. Each group will also be given a learning assessment. Afterwards, each pair of students will provide lifestyle modification counselling to a diabetic patient who is currently admitted to the hospital. A preceptor (either a medical physician or a pharmacist) would supervise the counselling session. A post-activity survey will be given to the students to determine changes in knowledge base and experience working with healthcare professionals of other disciplines.

Results: Data has been collected and is being analysed. Students reported increased learning when they worked with the other discipline. Overall, students felt they understood the role of the other discipline.

Conclusion: Students can gain valuable experience from an IPE activity. This activity helps students learn the various roles of the team member.

TIP19. Moving towards an integrated pharmacy curriculum: Medication history taking as an Entrustable Professional Activity

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Keywords: Placement, Peer Teaching

Objective: A five-year integrated pharmacy curriculum is an enabler for the development of a workforce able to deliver more clinical roles. Maintaining training capacity in practice settings with current resources is a challenge. One solution would be for students in higher years to support their junior colleagues. We hypothesised that pre-registration pharmacists (PRPs) in one teaching hospital in Wales, six months into their placement, would be ready to train 3rd year undergraduate students (UGs) to conduct medication history taking as an Entrustable Professional Activity (EPA) (Haines *et al*., *in press*).

Design: PRPs were given responsibility to train UGs without supervision from another member of staff. UGs would then take a medication history from a patient, under supervision from the PRP.

Assessment: A teaching evaluation form was completed by pairs of PRPs-UGs, with consent. UGs rated training as successful (mean: 9/10), where "successful" training was perceived as shadowing and then being observed in first few patient-facing interactions. Training was more in-depth than in their curriculum, and they enjoyed being taught by a PRP who was in university recently so was able to contextualise prior knowledge. PRPs felt confident completing the task after adequate practice on real patients and completion of medicines management rotation. Being entrusted with training colleagues was thought as extremely beneficial, contributing to their own development.

Conclusion: With current levels of training, future final year pharmacy students in an integrated pharmacy curriculum would be able to train junior colleagues unsupported.

Reference

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TIP20. Use of e-Learning packages in the delivery of the M.Pharm curriculum

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Keywords: e-Learning, Teaching Methods, Pharmacy, Technology Uses in Education

Objective: To understand student perspectives on the use of e-Learning packages to achieve M.Pharm learning outcomes in place of traditional modes of teaching and learning, such as lectures, workshops or directed reading.

Design: Year 3 M.Pharm PowerPoint lectures on Community Pharmacy Services and Labelling requirements were converted to interactive e-Learning packages using Articulate Storyline®. These topics were chosen as they had been introduced in earlier parts of the M.Pharm and they were straightforward to understand. Content was reviewed and broken down into more accessible sections. Careful consideration was required when selecting appropriate interactive activities to support contextualisation of learning and maximise engagement; this aspect of the design process was found to be particularly challenging. Feedback was obtained from students and staff regarding the utility of this mode of delivery compared with traditional methods.

Assessment: Fifty percent of students preferred delivery by e-Learning, compared to 15% who would have preferred lectures. Students liked the interactive sections of the packages but were less positive regarding sections that were content heavy. Students stated they would find e-Learning helpful in providing a refresher of past teaching, as preparation for lectures and/or workshops and to help put learning into context. Colleagues were of the opinion that this format would be useful for revision.

Conclusion: e-Learning packages can be time consuming to develop but can complement traditional modes of teaching. Further evaluation is needed to determine whether this mode of teaching can achieve positive outcomes for students and be considered as a replacement for traditional modes of teaching, such as lectures, so that contact time can be focussed on higher level learning.

TIP21. Introducing the Pharmacy SNOW (Strategies for New Opportunities Worldwide) Symposium for advancing pharmacy practice globally

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Keywords: International Education, International Co-operation, International Relations

Objective: The University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences created Pharmacy SNOW symposium to bring pharmacy practitioners and educators together to share knowledge and best practices for the advancement of pharmacy practice worldwide.

Design: The symposium was held in December 2016 in Denver, Colorado, USA. The primary themes of the conference: 1. Promoting your value inter-professionally; 2. Expanding pharmacy practice to optimise patient wellness; and 3. Education to improve practice. Pharmacy educators and practitioners were invited to present their work on existing global challenges and strategies related to disparities to improve health in underserved populations. There was also an open call for round table discussions and posters that addressed the primary themes of the conference.

Assessment: There were 46 registrants with ten representing countries outside the United States (US). Furthermore, a large percentage of US registrants presented on their activities in other countries to enhance pharmacy practice, including a riveting presentation on pharmacists in Medecins sans Frontieres. Participants' assessment that the symposium met their educational needs was excellent (3.9/4.0) and many described their favourite aspect to be networking with pharmacists whose expertise was worldwide.

Conclusion: The symposium created an opportunity for pharmacists with an interest in global/public health to network and be inspired by the work that others are doing. Based on the success of this inaugural symposium, plans for the next SNOW Symposium are underway.

TIP22. Inter-professional ward-based simulation supports healthcare students to learn about patient safety

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Keywords: International Education, Elective Courses, Global Education

Objective: Create and deliver a GH elective with a focus on the pharmacist role.

Background: Evidence suggests that United Kingdom (UK) healthcare students feel unprepared for registered practice with areas of concern including a lack of: prioritisation, on-call, and inter-professional communication skills with no opportunity to practice in a safe learning environment prior to registration.

Aims:

- To foster understanding between student healthcare professionals
- To help participants build communication and prioritisation skills

Objective: To increase awareness of patient safety issues and how to recognise and deal with them

Method: An eight-bedded simulated ward, using three manikins, five patients and four relatives (students as actors), was used for students to practice managing the ward. In each session there were six student nurses (SN), doctors (SD) and pharmacists (SP) with the two SD and SP acting as a single professional.

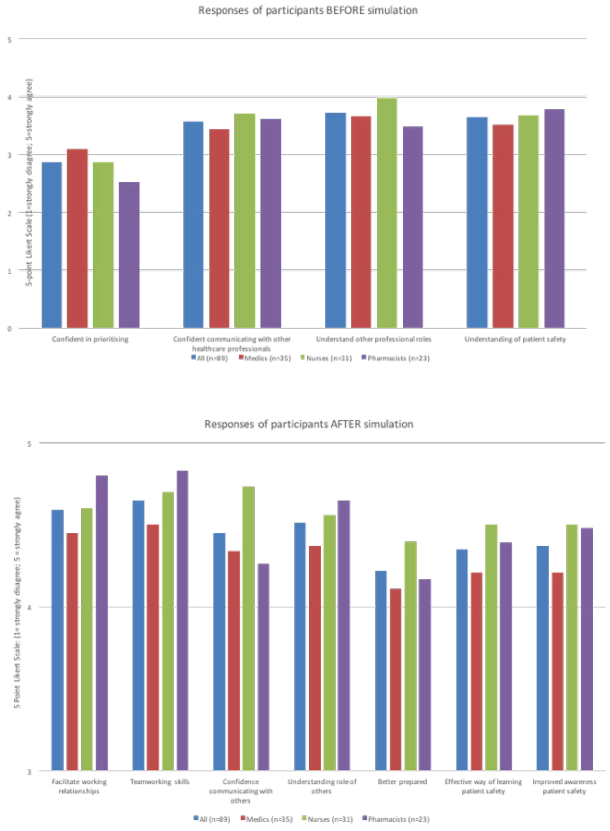
Design: Each patient had an evolving series of care needs running over three sessions, each included a five minute handover, 30 minute simulation and 20 minute debriefing session.

Assessment: Prior to and after the simulation session each student completed a 5-point Likert scale to self-rate their skills and confidence in communication, prioritising tasks, understanding others and patient safety.

Results: There were seven sessions and 89 students (35 SD, 31 SN, 23 SP). Changes in self-reported outcomes improved significantly (Figure 1), with unexpected learning outcomes including 200 patient-related safety issues and experiencing empathy for what it was like to be a patient.

Conclusion: Ward-based inter-professional simulation is an effective way of teaching healthcare students together and an effective way of highlighting patient safety issues and ways to improve patient safety.

Figure 1



TIP23. Pharmacy Leadership and Management: A new high fidelity simulation to prepare students for their future practise

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Keywords: Simulation, Practice, Teaching, Leadership, Management, Experiential Learning

Objective: To design and deliver a synoptic experiential learning experience drawing on leadership and management skills coupled with clinical problem solving in a high fidelity simulation. Our vision is to produce world leading pharmacists by providing them with diverse opportunities to demonstrate and expand their knowledge, skills and behaviours and prepare them for the changing healthcare landscape of the future.

Design: Pharmacy Leadership and Management (PLM) is based on the successful GIMMICS consortia blueprint. Development was informed by stakeholder events with local and national health commissioners, professionals, experts, patients and academic staff.

Teams of six final-year students run their own primary care-based pharmacy business competing against four others over four blocks of three days through the year. Simulated patients and academics deliver approximately 180 acute scenarios over the module to each team, comprising face-to-face, telephone and email queries. Teams also have longer term challenges including development new services and tendering for contracts. The curriculum covers all areas of practice including communication with patients and professionals, business and people development, medicines supply, clinical practice, governance and patient safety and health promotion and public health.

Assessment: Assessment uses a multi-format approach of OSCE for skills, reflective portfolio for longer term and attitudinal attributes and an online assessment for knowledge based elements.

Conclusion: In this paper, we will present the development of this educational experience and describe our implementation and operationalisation of this highly complex module.

TIP24. Professional socialisation of the pharmaceutical consultant (PC)

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Keywords: Socialisation

Objective: The profession pharmaceutical consultant (PC), operating in hospitals or public pharmacy, is relatively new, and in line with the advancement of professions as physician assistant or nurse practitioner. Our first study focused on establishing a competency framework for the PC, reflecting perspectives from the pharmaceutical field. Unexpectedly, the focus groups provided us with knowledge on hardships PCs have to overcome in order to "find their place" in their work environment. Leaving a well-known social environment (team of pharmacy assistants) plays a role, as well as securing support from pharmacist (new position and responsibilities). A better understanding of professional socialisation of PCs gives us tools to prepare and support our students in this transition.

Research question: What are underlying processes (personal, social, organisational) that influence the transition from being a pharmacy assistant to performing as a PC?

Design/Assessment: I would like to discuss with the audience the following query:

Transitions are well known in medical education research. Professional identity development, sociology of profession, organisational psychology, are all examples of frameworks that are applied to understand "what's going on".

What could be useful theoretical frameworks in order to support our broader understanding of different aspects that influence PC transition?

Conclusion: What I hope to achieve is a sense of theoretical frameworks that surround my previously obtained data on transition obstacles and pains.

TIP25. Creating inter-professional learning opportunities in the care of the elderly

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Keywords: Inter-professional Education, Learning, Care of the Elderly

The first year Monash medical and pharmacy students visit an elderly care home as fulfilment of their respective courses. Prior to this they have been doing it in silos. This project aims to provide opportunities for medical and pharmacy students to learn from, with and about each other, while achieving the specific objectives of care of the elderly in their respective units. First year medical and pharmacy students were recruited in this study on voluntary-basis. The students were divided into small groups, consisting of two-three students from each school per group. Each group visited a nursing home and interviewed consenting residents to gather their medical history, health and medication-related issues. The students discussed the learning issues which facilitated understanding of roles of different health professions. At the end of the project each group presented their findings. inter-professional education (IPE) outcomes such as team work, communication, changes of perceptions were analysed from the students' reflective diaries, reports and focus group interviews. In 2015 fourteen medical and fifteen pharmacy students enrolled in this project as compared to 18 from each school in 2016. Pharmacy students appreciated the clinical skills that they learned from their medical counterparts. On the other hand, medical students learned the systematic methods of medical reconciliation and medication review from the pharmacy students. Packed time tables and different expectations were listed as the main challenges. This project was well received by the students from both cohorts. Other opportunities for IPE should be explored to provide continuity.

TIP27. RPS Pre-registration Pharmacist Trainee National Revision course

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Keywords: Simulated Environment, Pharmacy, Pharmacists, Professional, Continuing Education, Formative Evaluation

Objective: The Royal Pharmaceutical Society's Pre-Registration Panel has developed an intensive two-day weekend revision course and mock examination for pre-registration pharmacist trainees in preparation for the registration assessment. The aim is to deliver pre-registration training days on a national scale and support trainees in identifying personal learning needs across all sectors.

Design: The revision course is designed and delivered by 12 UK registered pharmacists with extensive experience in hospital, community, academia, general practice and industry. The panel travels across the UK from London to Newcastle, reaching over 1800 preregistration pharmacist trainees over 12 events. Day one of the course focuses on key concepts pertaining to pharmaceutical calculations, law and ethics, clinical therapeutics, and common minor ailments aligned to the regulator's assessment framework. The teaching and learning strategy combines a blend of didactic teaching, case-based collaborative learning, role-play and peer-to-peer learning.

Assessment: Trainees are assessed on day two of the course. The mock exam is aligned to the regulator's assessment model and allows students to familiarise themselves with various questions styles, timing and format unique to the registration assessment. This is followed by in-depth feedback of the answers and question rationale to inform learning and individual preparation for the registration assessment.

Conclusion: The RPS preregistration course is innovative as it is one of the very few training providers in the UK that has a nationwide outreach and includes a full two part mock exam in a simulated environment. Collation of feedback is ongoing. However, statistics from 2015 indicate that the candidates who completed the course had surpassed the national average pass rate.

TIP28. Peer assisted learning (PAL) and the perceived benefits for Year 2 PAL leaders

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Keywords: Peer Tutoring, Education

Objective: Peer assisted learning (PAL) involves Year 2 pharmacy student volunteers called PAL leaders, trained in leadership and facilitation skills, who run study sessions for Year 1 pharmacy students (Hammond *et al*., 2010). PAL was initially developed to aid transition for Year 1 pharmacy students into university and the course. An investigation was undertaken to determine the perceived benefits, and impact of being a PAL leader, for Year 2 pharmacy students.

Design: Eight PAL sessions were timetabled during the academic year and two Year 2 PAL leaders facilitated 20 Year 1 pharmacy students. Topics were determined by Year 1 students, meaning they had control of the subjects to study in PAL sessions. Leaders encouraged discussion, collaboration and consolidation of knowledge between students.

Assessment: One-to-one interviews with 26 PAL leaders determined two key themes. Leaders developed transferable skills like confidence, communication, organisation, teamwork, interpersonal and time management. Professionalism helped integration with pharmacy students in other years and made them think how they behaved in and out of university. Being a leader made them think how they approached their own work. Leaders thought these skills could be used throughout their degree and when they are pharmacists. Some leaders believed this opportunity could make them more employable.

Conclusion: These outcomes demonstrate that students benefit from being a PAL leader. The role provides additional opportunities to develop skills and the student-led approach of PAL could help enhance their employability.

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TIP29. Evaluate the effectiveness of a Staff Trainee Liaison Group by comparing student feedback from two cohorts at the same point in their programme 12 months apart

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Design: The University of East Anglia (UEA) School of Pharmacy, in partnership with, West Suffolk College introduced a new residential programme for Pre-registration Pharmacy Technicians in 2015. In line with University policy and programme requirements a Staff Trainee Liaison Group (STLG) was formed to engage trainees in the continuing development of the programme. The STLG met at several points during the year to provide feedback on behalf of their cohort. The Programme Management Team (PMT) put into action changes to the programme for current and future cohorts based on the feedback received.

Objective: The aim of the study is to evaluate the effectiveness of STLG by comparing student feedback from two cohorts at the same point in their programme 12 months apart.

Assessment: Each cohort was asked to complete an online survey following their first residential study block of which results were compared. Three meetings were held between September 2015 and December 2016 for cohort 1 STLG and feedback was compared.

Results: Results show that feedback and trainee satisfaction from cohort 1 to 2 has improved (Figure 1)

Conclusion: The STLG has provided each cohort of students the opportunity as stakeholders to provide feedback for the improvement of the programme for peers and future cohorts. The PMT have listened and responded to concerns of students via the STLG there has been a significant improvement in students who would recommend the programme to others. The STLG plays a key role in the development of the programme for Pre-Registration Pharmacy Technicians

Figure 1: Online survey results comparison for two questions

Question from the online survey	I am happy to stay away from home for the residential study blocks (strongly agree, agree, neutral, disagree, strongly disagree)	I would recommend this training model to others wanting to train as pharmacy technicians (strongly agree, agree, neutral, disagree, strongly disagree)
Cohort 1	25% of students were generally happy to attend the residential block	55% of students would recommend the programme
Cohort 2	64% students were generally happy to attend the residential block	100% of students would recommend the programme

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TIP30. Utilisation of a novel online educational tool to assist pharmacy students to self-critique reflective writing tasks

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Keywords: Formative Evaluation, Reflection, Self Directed Learning, Self-Evaluation, Student Improvement

Reflective writing is a tool to enhance self-directed learning (Tsingos-Lucas *et al*., 2016)

Objective: To enhance reflective writing capacity, and provide an opportunity for self-assessment prior to submission of reflective writing assessment tasks.

Design: Utilisation of a novel online reflective writing tool, AWA-Academic Writing Analytics (Buckingham Shum *et al*., 2016) is currently trialled as a research pilot in the first year Masters of Pharmacy Curriculum. AWA provides a student guide to constructive, formative feedback on drafts of reflective writing.

Assessment: AWA tags phrases and words relating to reflective writing and conversely identifies text that may lack reflective writing elements. Students are prompted to re-think their texts and critique their work. Tags include features of reflective thinking: (i) reflection on initial thoughts and feelings; (ii) challenges; and (iii) new knowledge leading to change. Furthermore, words and phrases are emphasised with (i) plain lines; (ii) dotted lines and (iii) dashed lines, indicating more specific reflective details. Finally, bold text indicates deeper reflection, personally applied.

Conclusion: AWA has the potential to improve students' reflective writing skills and enhance self-directed learning processes.

TIP31. The College of Pharmaceutical Sciences, an inquiry-based undergraduate honours programme for the training of pharmaceutical scientists

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Keywords: Undergraduate Curriculum, Inquiry, Research, Pharmaceutical Education

Objective: In addition to a Bachelor-Master trajectory for the education of practising pharmacists, Utrecht University started the College of Pharmaceutical Sciences (CPS), aimed at attracting talented research-oriented students from an international context. The aim was to develop a Bachelor programme with a focus on training for the discovery and development of innovative drugs, fostering high-end learning, higher-order thinking skills, self-regulated learning and creativity of students.

Design: For the design of the curriculum the theory about inquiry-based learning (IBL) was used as a conceptual framework (see Table I). IBL is a research-based, student-centred pedagogy, based on authentic tasks and situated learning. Every full-time ten-week course contains an individual theoretical exam after six-seven weeks, consisting of questions requiring a high level of understanding from the students. The last weeks of every course are dedicated to the IBL activities and the assessment of (group) products, using authentic assignments and criteria from the professional field of the pharmaceutical sciences.

Assessment: Evaluations show that the IBL-based curriculum strongly motivated students and succeeded in teaching them essential research skills. Students learn and perform at a high level, indicated by the level of their products and the experiences of the teachers, illustrated by the fact that students contributed as first or second author to published research papers.

Conclusion: The inquiry-based curriculum is successfully implemented and is experienced positively by the students and the teachers.

Table I: Conceptual Framework Curriculum Design CPS

Conceptual framework curriculum design
Research-based Student focused with an emphasis on research processes and problems
Inquiry based learning Learning driven by questions and complex realistic problems
Authentic context Learning environment reflecting the future profession (pharmaceutical research)
Autonomy Room for personal initiative, freedom of choice
Scaffolding Right amount of teacher support at the right time

References

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TIP32. History Taking and Physical Assessment (HTPA) for pharmacy students

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Keywords: Education, Clinical Diagnosis, Clinical Education

Objective: Education and training of pharmacists requires demonstration of relevant diagnostic skills. These include physical assessment techniques and history taking if they are to undertake clinical roles in GP surgeries, such as running clinics (CPPE). Physical Assessment and History Taking (PAHT) workshops were developed encouraging learning, understanding and development of professional skills.

Design: Activities for Year 3 and 4 pharmacy students during one three-hour session included performing respiratory examinations on peers to identify normal parameters and on mannequins for diagnostic features. These took place in groups of four, supervised by one pharmacist facilitator. All students had an opportunity to be actively involved in PAHT activities during the session.

Assessment: Feedback from 73 pharmacy students (collected by means of before and after questionnaires; and focus groups) indicated that "confidence undertaking PAHT" increased (from 2.4 to 6.1 using 1-10 scale) and that they 'felt comfortable undertaking PAHT' also increased (from 3.4 to 6.6 on a 1-10 scale). Concerns were raised about pace of change and students felt the public were unaware of key skills pharmacists offer. Overall student satisfaction with their experience was very high and they suggested PAHT skills be introduced from Year 1 of the course.

Conclusion: These outcomes identified students' apprehension, interest and awareness of role changes and additional clinical skills. They are aware of NHS pressures, feel excited about the new opportunities and wonder how the public will accept the changes.

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TIP33. Enhancing recognition, support and training for Monash University pharmacy Intern Training Programme (ITP) preceptors to optimise the intern experience

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Keywords: Pharmacy, Internship Programmes, Clinical Teaching (health professions), Experiential Learning, Academic Support Services

Objective: To describe initiatives which have enhanced recognition, support and training for pharmacy intern preceptors.

Design: Australian pharmacy graduates must complete an ITP and undertake an internship with an approved preceptor and practice site prior to registering as a pharmacist. An extensive support package has been developed and implemented for preceptors. The package is designed as a continuum throughout the internship and includes:

1. A free online preceptor training programme, linked to the education domain of the Advanced Pharmacy Practice Framework, and accredited for Continuing Professional Development.
2. A formal process for recognising and credentialing preceptors as Clinical Educators (CEs).
3. Standardised tools to enhance preceptor feedback to interns regarding workplace activities.
4. Increased engagement with preceptors (including opportunities to provide feedback) and extended support for their interns when required.

Outcomes from 2016 are reported here.

Assessment: Sixty-two pharmacists completed the CE training programme and are at various stages of becoming credentialed. Preceptors were positive about the initiatives; some sites requested all staff involved in student/intern education complete the training

programme. Marking tools were successfully integrated into the intern year to maximise structured feedback opportunities about workplace activities. Additional university resources enabled routine site visits and identification of interns requiring extended support from the university. Attendance by the ITP manager at professional pharmacist intern special interest group meetings further enhanced preceptor engagement.

Conclusion: The package of support for preceptors has been well received; it is dynamic and continually evolves to meet the needs of individual preceptors and their interns.

TIP34. A topic discussion designed to articulate a study abroad experience in an interview session

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Keywords: Study Abroad, Professional Development, Employment Interviews

Objective: Purdue University College of Pharmacy Global Health Advanced Pharmacy Practice Experience (APPE) student participants have historically struggled to summarise their growth in clinical knowledge, professional skills, and emotional maturity into a concise, articulate interview responses. This project aimed to strengthen students' confidence and ability to create articulate interview responses about the skill set developed on this APPE.

Design: A preceptor-lead topic discussion allowed time for students to reflect and brainstorm on all aspects of their APPE and contextualised experiences into commonly asked interview questions. Students completed a 19 question online survey one month after graduation to assess the activity's impact on their ability to articulate answers during interviews. A 5-point Likert scale was used for most questions. The institutional review board approved of this study.

Assessment: Over two years 37 students completed the interview preparation topic discussion and 24 completed the survey. Participants had 97 interviews; 73 percent, were asked about Kenya during the interview. The data revealed 75% "strongly agreed" that they were able to apply their experience in Kenya to typical interview questions after completing the topic discussion. The majority (23), either "strongly agreed" or "agreed" that the topic discussion prepared them to defer interview questions away from the topic of safari.

Conclusion: Students who participated in the interview preparation topic discussion perceived an improved confidence and ability to articulate their experience in Kenya during an interview after an interview preparation discussion. Future plans include expanding this topic discussion to include other international APPE experiences offered at PUCOP.

TIP35. Are animal patients important in a pharmacy degree?

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Keywords: Veterinary Medicine, Veterinary Medical Education, Emerging Occupations, Interdisciplinary Approach, Curriculum

Objective: The current pharmacy curricula in New Zealand is focused on providing quality use of medicines for human patients. In the pharmacy discipline, animals are incorporated in teaching, research and within the scope of practice of delivering healthcare. Is there value in pharmacy undergraduates learning about medicines and dosing considerations for animal patients as part of their education?

Design: In the Bachelor of Pharmacy curriculum at the University of Otago, one lecture on the topic of veterinary pharmacy has been developed as part of a 3rd year course on drug delivery systems. A questionnaire, distributed electronically to 136 final year B.Pharm students, investigated their views and interest in veterinary pharmacy. Interviews with pharmacists were based on pre-defined questions and were recorded then transcribed.

Assessment: The majority (80%) of students report learning about the term 'veterinary pharmacy' during their B.Pharm degree rather than from other sources. Of the students surveyed, 58% were interested in medicines for animal patients, and this correlated highly with those students who lived with animals. Approximately half of student respondents were interested in a specialised course on animal medicines. New Zealand pharmacists were interviewed and they regarded a knowledge of animal medicines as not essential for their practice, however the majority of pharmacists were interested in pursuing a specialised course on veterinary pharmacy.

Conclusion: The international One Health initiative aims to expand interdisciplinary collaborations between medical and veterinary sciences. There is interest from both students and pharmacists in New Zealand to incorporate animal patients in their learning and could facilitate inter-professional education.

TIP36. M.Pharm peer assisted learning programme - perceived benefits for Year 1 pharmacy students

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Keywords: Peer Tutoring, Education

Objective: Peer assisted learning (PAL) involves Year 2 student volunteers called PAL leaders, trained in leadership and facilitation skills, who run study sessions for Year 1 students (Hammond *et al*., 2010). PAL was

developed to aid transition into university for Year 1 pharmacy students and the course. PAL leaders were Year 2 pharmacy students.

Design: Eight PAL sessions were timetabled during the academic year and two PAL leaders facilitated 20 pharmacy students. Topics were student-led, meaning Year 1 students had control of the subjects to study and discuss in sessions. PAL leaders encouraged collaborative learning and consolidation of knowledge between students.

Assessment: Feedback from 182 Year 1 pharmacy students, collected by means of a questionnaire, indicated that those students attending more than four PAL sessions (good attenders) during the academic year, benefited more than those attending fewer sessions (poor attenders). Students perceived an "enhanced knowledge and understanding of course topics" (60% good attenders compared to 34% poor attenders); "better understanding of how to meet course expectations" (51% compared to 22%) and an overall "confidence with the course" (42% compared to 11%). Attending PAL increased students' perceived "preparedness for assessments" (86% compared to 59%).

Conclusion: These outcomes (and a majority of the others identified in the questionnaire responses) suggest PAL sessions are useful and regular attendance impacts upon pharmacy students' perceived knowledge, understanding and confidence with their course.

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TIP37. Evaluating a train-the-trainer programme for cardiovascular health in Malaysia

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Objective: There is an expressed need for the development of soft skills among pharmacists by the profession. In response, we designed and evaluated a train-the-trainer programme to develop soft skills specially in the area of cardiovascular health delivery in their community pharmacies.

Design: A 'train-the-trainer' programme on cardiovascular health was developed for community pharmacists in Malaysia, based upon our literature review and resources available online. The programme consisted of a face-to-face training and practical workshop with selected pharmacists from pharmacy chains in Malaysia on core topics in cardiovascular health (disease severity, risk of non-adherence and dietary advice), medication management and communication skills. These participants were then tasked to deliver a similar training to their colleagues at their respective pharmacies. A pre-post training survey was administered to participants who attended the workshop to determine the training content, experience and recommendations for enhancement

Assessment: Forty community pharmacists attended the training. Of these, 35 pharmacists completed the pre- and post-training survey. The train-the-trainer model was very well received, with a high level of satisfaction among participants. Most participants valued the interactive nature of the training and integrated team-based approach. Participants also self-reported increased confidence and ability to conduct a similar workshop post-training ($p<0.05$).

Conclusion: The train-the-trainer model was effective in improving community pharmacists' perceived ability to teach cardiovascular health. This model could be a viable option for rapidly promoting and delivering educational initiatives in a resource limited setting.

TIP38. Education as the key to student global health activism? PharmAlliance Fight the Fakes Campaign

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Keywords: Student Leadership, Social Action, Public Health, Pharmacy, Social Media

Objective: To increase public awareness and educate pharmacy students about the global health threat of substandard and falsified medicines. The PharmAlliance partnership aims to empower students to act as agents of change through a grassroots student led advocacy and thereby safeguard patient safety.

Design: The UCL campaign was first launched in 2015 and then expanded to include PharmAlliance partners in 2016. It is the first educational platform with a mission statement that unites staff and students across three continents as a global health army to "fight the fakes." The three committees run in parallel and work together to achieve these goals. The campaign is largely social media based where students blog and vlog their campaign activities *e.g.* streaming live interviews with faculty members. A UCL flipped classroom lecture recording will be disseminated amongst partners in February 2017 to meet the education-based objectives and share teaching resources.

Assessment: In 2016, the committee delivered an intervention at the 69th World Health Assembly joint side event on SSFFC. Earlier in 2016, at the Geneva Health Forum UCL FTF was identified as a 'top ten influencer' on twitter indicating early success in meeting the campaign's objectives to increase awareness of fake medicines at high level fora. However, a UCL survey distributed on campus showed that 75% of respondents

had not heard of fake medicines before indicating that awareness is still low amongst the local student body.

Conclusion: The campaign has had several high profile successes over the past year including representation on major global stages such as the GHF, WHA, and IFPW general annual meeting. However, more support is needed to sustain educational and research activities, and increase public engagement with the campaign locally and globally.

Figure 1: Collage of student-led campaigning activities hosted at Harvard University, 69th World Health Assembly held at the United Nations, University of North Carolina Eshelman School of Pharmacy, University College London School of Pharmacy

TIP39. "Switching Places": Influences affecting choice of herbal supplements, over-the-counter medications, and dietary product selection by pharmacy students following a professional course lecture (SPINACH-OTC)

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Keywords: Class Size, Pharmaceutical Education, Patient Education, Food, Nutrition Instruction

Background: Complementary and alternative medicine (CAM) is a growing field. The need for patient counselling on nutrition therapy and physical activity, since they are major contributing factors to many chronic medical conditions.

Aims: To evaluate the impact of a professional course lecture on knowledge base and factors influencing herbal, over-the-counter (OTC), and dietary product selection.

Methods: Third professional year students were instructed to visit a supermarket to answer questions related to a patient case. Students were asked to make recommendations on various products such as butter, cereal, cookies, and herbal products based on the patient's disease states without doing any research. When students returned to class, a 60-minute nutrition lecture was delivered. Students were then encouraged to return to the supermarket to assess whether product selections would change based on knowledge acquired from the lecture. Surveys collected demographic data, comfort levels with product recommendations, factors that influenced product selection, and activity value.

Results: Twenty-three students completed the study. When recommending herbal products, 48% of the class felt comfortable before the activity compared to 83% after the activity. The comfort levels of recommending cookies, butter, and cereals pre verses post were 35% and 64% respectively. The majority of students (83%) indicated the activity was enjoyable and that it could impact future recommendations as a pharmacist. In addition, 79% of the class felt the activity was a better way to learn compared to a traditional lecture. The most common influences for selecting an herbal product were marketing and prior experience.

Conclusions: Students experienced the difficulties faced by individuals when selecting products with chronic disease states.

TIP40. Using performance and leadership mentors to support students during a simulated pharmacy business module

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Keywords: Simulation, Practice Teaching, Leadership, Management, Experiential Learning

Objective: To design and deliver a synoptic experiential learning experience drawing on leadership and management skills coupled with clinical problem solving in a high fidelity simulation. To provide undergraduates with a mentor employed to support and coach groups and individuals to learn, practise and develop their leadership and team working skills.

Design: Pharmacy Leadership and Management (PLM) is a module which provides an experiential learning simulation drawing on leadership and management skills coupled with clinical problem solving. Teams of six students run their own primary care based pharmacy business competing against each other, based on a successful model currently run by the GIMMICS consortia of universities across Europe.

Working with the university graduate school, a job description and person specification was developed. Mentors were appointed, using a robust application and interview process. A bespoke leadership and management

training programme was co-developed between the Pharmacy and Graduate schools. The mentors supported student-led group sessions, coaching them to reflect on performance, develop solutions and change initiatives.

The performance mentors were able to monitor the progress of their clients and stimulate interventions to improve their performance.

Assessment: Students are required to reflect on their team working and its development during the simulation via their reflective portfolios.

Conclusion: In this paper, we will present the development of the mentors and the impact they had on student learning. Qualitative interviews are currently being conducted to determine the impact of the mentor role on recent graduates and their development as future leaders.

TIP41. Therapeutic products as a context for pharmacy students learning physical chemistry

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Keywords: Physical Chemistry

Objective: It is hypothesised that the learning of physical chemistry concepts by pharmacy students is limited by a lack of context at the early stages of engagement, as it is traditionally taught in a 'bottom up' manner, from fundamental concepts to application. Improved engagement with essential physical chemistry concepts can be achieved using familiarity with a proposed suite of therapeutic products as the contextual starting point.

Design: Using Diprivan (propofol emulsion) as one example, as the starting point for developing understanding of concepts of emulsions, surface active agents, drug partitioning, vapour pressure and miscibility, students receive pre-reading for familiarisation and a one page prompt sheet of questions, and assessment questions commence from the product description.

Assessment: To date evidence is anecdotal between cohorts across years before and after implementation. A small focus group from the 'historically' taught cohort where shown material used for the 'new' cohort, and provided feedback that the science was more interesting, and therefore more readily integrated into understanding when using the products as the starting point, and as assessment subjects.

Conclusion: Although requiring quantitative assessment, using existing products as the starting point for development of understanding of physical chemistry in a top-down approach, is indicated to improve learning and understanding of these often important but poorly adopted concepts.

TIP42. Carolina virtual patient initiative

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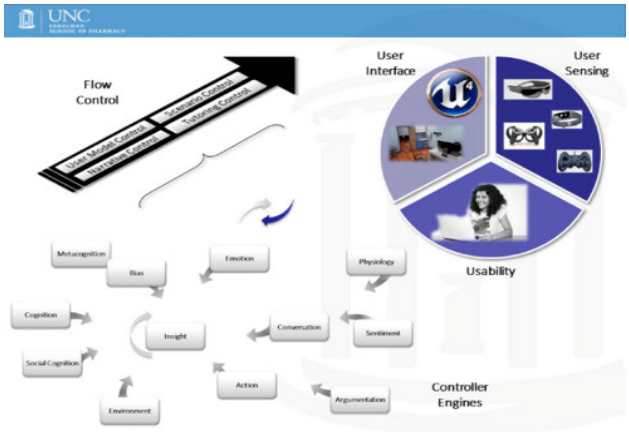
Keywords: Simulation, Experiential learning, Vignettes

Objective: The Centre for Innovation in Pharmacy Simulation (CIPS) within the UNC Eshelman School of Pharmacy has an initiative to provide immersive educational experiences with virtual patients to pharmacy students to increase their confidence and competence. CIPS calls this initiative nXhuman.

Design: Virtual patients are typically limited in scope, focusing on patient/clinician dialog, acute care, dispensing, or hands-on skills, but not presenting a comprehensive patient. nXhuman shall model a full person. Students shall engage with virtual patients to consider multiple dynamic attributes including age, gender, health status, therapeutic interventions, compliance, lifestyle choices, personal history, social status, and genetic background. CIPS' nXhuman is built upon many years' experience developing, testing, and implementing virtual characters. The architecture has three main components: (1) A user experience primarily via the Unreal® Engine 4, with appended sensing devices and augmented reality equipment, that engages the student; (2) flow control that directs and monitors students' interactions with the virtual character and gauges progress against learning objectives; and (3) controller engines that model psychological, sociocultural, physiological, and pharmacokinetic aspects of the virtual patients.

Assessment: nXhuman is under development. The architecture is functional; current steps are to develop and implement cases and deliver a compelling user experience. Preliminary testing is planned for Summer into Autumn, 2017.

Conclusion: CIPS' nXhuman platform shall provide a mechanism for students to have dozens of simulated opportunities with virtual patients to interview, identify concerns, understand sociocultural limitations, and recommend therapies, better preparing them for actual patient engagement.



TIP43. Pharmatopia in Swedish distance pharmacy education

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Objective: The objective was to use and evaluate Pharmatopia in a Swedish distance pharmacy programme.

Design: Pharmatopia consists of interactive web-based learning modules (Pharmatopia, 2017). The introduction of Pharmatopia at Umeå University was done in collaboration with Monash University in Melbourne. Pharmatopia was used in the course Drug Formulation during the 4th year of the Master of Science in Pharmacy programme at Umeå University. The Master's programme is web-based and the education is delivered mainly through a virtual learning environment. The module of Pharmatopia used was the one where the effect of different excipients on tablet properties can be evaluated.

Assessment: Twenty-eight students completed the exercise during May 2016. The students evaluated the experience afterwards by completing a written questionnaire (n=24). Of the students, 75% agreed or strongly agreed that the exercise helped them to better understand the relationship between excipients and properties of tablets and 79% considered that tableting lab provided a stimulating learning environment. Generally, the students found that the instructions were sufficient in order to effectively undertake the task. Some technical problems were experienced in the beginning mainly due to security settings of the students' own computers resulting in problems accessing the module. However, this could be easily be rectified.

Conclusion: The students were generally very satisfied with Pharmatopia and the exercise was considered suitable in order to help the students understand the effect of excipients on tablet properties. The exercise will be included in the curriculum also in the coming courses.

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TIP44. Providing closure for an advanced global health experience: A reverse culture shock education programme

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Keywords: Study Abroad, Culture Shock

Objective: As more student pharmacists participate in global health experiences it is important to not only prepare them for their time abroad but also to provide closure on the experience. A previous survey of Purdue University student pharmacists completing an Advanced Pharmacy Practice Experience (APPE) in Eldoret, Kenya revealed that 47% felt underprepared for re-entry into the US. The purpose of this project was to develop and assess a reverse culture shock programme.

Design: Students who participated in the Purdue University Global Health APPE were provided with a reverse culture shock handbook prior to departure and sent a reminder email to review material before returning to the United States (US). Upon return from the experience and in addition to completing the manual, students were invited to either participate in a group dinner at a faculty house or complete individual Skype interviews.

Assessment: Students will complete an online survey to assess the reverse culture shock activities and impact on their experience. The institutional review board approved of this study.

Conclusion: Thus far, students have anecdotally indicated the faculty led group dinner discussions have helped with the adjustment period and reduced the symptoms of reverse culture shock experienced. Future plans include having a faculty meeting for each student group approximately one month after their return and inviting all previously returned students to each event to allow more broad sharing of experiences among students.

TIP45. Teaching clinical reasoning skills in a postgraduate distance course for practicing pharmacists

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Keywords: Thinking Processes, Thinking Skills, Pharmacy, Decision Making, Reasoning

Objective: Pharmacy practice is expanding to include clinical services such as prescribing and medicines review. Clinical reasoning and decision-making are essential skills for these services. The aim of this work is to describe innovative teaching practice designed to develop clinical reasoning skills for pharmacists in a postgraduate distance education programme.

Design: Over the past three years, annual cycles of trial, data collection, reflection, and re-design, were used to develop a structured model for teaching clinical reasoning to pharmacists. The components of clinical reasoning were articulated as a series of skills that were taught in a step-wise manner. This model involves teaching students to: 1) prioritise medicine-related problems; 2) research

the evidence-base; 3) set goals for management; 4) explore management options and impact; and, 5) use this information as the basis for a clinical decision. Students progressed through the steps in small groups using "think aloud" exercises. Learning was supported by an online discussion board, video conferences, and written assignments.

Assessment: Feedback from students indicated that they would be more confident with reasoning and decision-making when conducting clinical services. In addition, the increased interaction with other students and the sustained engagement with tutors during the teaching period created a supportive and interactive teaching environment.

Conclusion: This model for teaching clinical reasoning will be of interest to pharmacy educators seeking to develop advanced reasoning skills with their students. Concurrent research has evaluated the definition of clinical reasoning used in this teaching model by surveying advanced practitioners from across New Zealand.

TIP46. Developing students' critical thinking: A proposed tool

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Keywords: Critical Thinking, Employability, Graduate Attributes

Objective: Within the university sector, there is a strong consensus that critical thinking (CT) is essential, with a vast majority of educators stating that developing students' ability to think critically is an essential goal of undergraduate education. But in effect, CT is in general not widely or efficiently taught in higher education. The objective of this innovation is to explicitly teach CT in a science context to enhance students' CT awareness and disposition and therefore employability.

Design: Philosophical theories and concepts around CT have been compiled and synthesised to design a novel teaching model based four pillars that need to be addressed with students: knowledge, dispositions/ attitudes, CT actions, CT standards of achievement/ criteria and elements of reasoning/argument. The tool features bespoke icons representing the keywords that students need to master. Corresponding videos aim at explaining the main concepts of CT in a science context. This tool is designed to be used in conjunction with authentic assessment tasks and has been trialled in 2015 and 2016.

Assessment: Pre- and post-intervention analyses provide positive initial results indicating an increase in student disposition and awareness around CT (2015-PreTest, n=50, median=302.5; 2015-PostTest, n=42, median=315.5). These positive results align with in-class pre-/post-intervention assessment indicating increased understanding of CT concepts.

Conclusion: This proof-of-concept study shows the relevance and effectiveness of this CT tool. This justifies its extension and further testing through model implementation and collaborative development amongst interested parties in the university sector.

TIP47. Providing pharmacy students unique inter-professional education (IPE). Experiences through oral healthcare-related opportunities

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Keywords: Students, Inter-professional Relationship, Education, Pharmacy, Dental Health

Objectives: To enhance training of health profession students through inter-professional education (IPE) focused on oral healthcare and improve vulnerable and underserved communities' access to and quality of care.

Design: Students and faculty from schools of dentistry, dental hygiene, nursing, medicine, nutrition, pharmacy, and social work participate in weekly two-hour general oral medicine and special needs case discussions and student-led community-based clinical experiences. Community-based sites provide care to underserved patients via interdisciplinary teams precepted by pharmacy, nursing, medicine and dental faculty. A student-led, clinical presentation is provided before team-based patient evaluations and interviews. After interviews, students make recommendations to faculty. After group discussion, students counsel patients on recommendation, adherence, and preventive care. Weekly, faculty-led, inter-professional didactic case discussions allow students to interact with other professions to better understand each discipline's role and how to collaborate and manage social, personal and cultural barriers.

Assessment: A student and faculty advisory committee advises investigators on programme progress and opportunities. Metrics on interdisciplinary interaction during case conferences are recorded by an observer. Students debrief with facilitators after each case review session and comment on their learning. They also complete a post-activity survey about their interactions and experiences. Results indicate nearly all (92%) of students gain knowledge about other professions from this experience.

Conclusion: Comprehensive oral health-related IPE clinic experiences and case discussions provide pharmacy students opportunities to engage other disciplines, share best practices, and provide patient care with preceptors from multiple disciplines.

TIP48. Collaborating for global practice: Linking global health research to education

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Keywords: Global Health, Research Education

Objective: Globalisation has made global health a topical issue. Pharmacists and pharmacy students in high income countries are in a unique position to collaborate on initiatives to improve health outcomes of communities living in resource poor countries. An increasing number of pharmacy schools are now offering opportunities to learn about and get exposed to global health. Global health researchers can extend relevant experiences for students to expand their interest, knowledge and appreciation of global issues. A self-directed global health research experience was created for students pursuing a course-based Master's or Pharm.D degree.

Design: Supported by a public health research agenda to improve the management of childhood malaria in rural Uganda, the experience was designed to provide students with the opportunity to explore an important global health issue while honing research skills. This included learning about research methodology, data analysis, and dissemination of findings.

Assessment: Assessment included evaluating all aspect of the students' work and completion of a reflective diary. In its first cycle, one student was recruited and supervised by a pharmacist academic. The student participated in the analysis of six focus groups that explored beliefs and practices of mothers related to malaria. The analysis revealed key themes to consider when designing a public education programme, an initiative to be taken up by successive students. The students' reflections demonstrated acquiring a broader range of skills and knowledge.

Conclusion: This experience suggests that global health researchers can help identify and shape relevant learning opportunities that can be impactful for the students and the recipient communities.

TIP49. Supporting hospital pre-registration trainee pharmacists in community pharmacy placements. The development, implementation and evaluation of an innovative training pack

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Keywords: Experiential Learning, Educational Resources, Pharmacists, Professional Training, Community Experience

Objective: Hospital pre-registration trainee pharmacists undertake short placements in community pharmacy to attain competence in a range of performance standards set by the General Pharmaceutical Council (GPhC). The aim of this study was to develop, implement and evaluate a structured, comprehensive training pack to support experiential learning during community placements.

Design: A training pack was developed in consultation with community pharmacists and current trainees. It was designed to cover all core competencies relevant to community practice and incorporated all stages of learning using a blended approach (Figure 1).

The pack was introduced to two groups of trainees in the east of England enrolled on the UEA training programme. The first group had completed their placement without the use of the training pack. The second group had access to the pack two weeks prior to their placement.

Assessment: Trainee evaluation, via piloted questionnaires, will explore four aspects relating to this learning resource:

- Identification of learning needs
- Ability to support experiential learning
- Comprehensive coverage of relevant performance standards and practice skills
- Meeting individual learning needs

This will be followed by focus group discussions with members of each group.

Conclusion: This innovative tool, developed and implemented to support learning during short community placements utilises a blended learning approach. The comprehensive evaluation will provide evidence for both the need and value of the tool as part of quality pre-registration training.

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TIP50. Implementation of a pharmacotherapy consult service in a dental school clinic setting

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Keywords: Pharmacy, Drug Therapy, Dentistry, Clinical Teaching (Health Professions), Interdisciplinary Approach

Objective: To describe the development and implementation of a pharmacotherapy consult service focused on inter-professional practice collaboration between Doctor of Pharmacy (Pharm.D), Doctor of Dental Surgery (DDS), and Dental Hygiene (DH) students in dental school clinics.

Design: Pharmacy and dental faculty created a pharmacotherapy consult decision pathway that allows third year DDS students and second year DH students to request medication-related consults for their patients. All students attended an orientation on the process and scopes of practice. Each DDS and DH student, in collaboration with their faculty, self-identifies qualifying patients and submits a request. Consult services are conducted by pharmacy faculty and second year Pharm.D students and include reviewing medication histories, providing medication and chronic disease state education, answering medication-related inquiries, and conducting patient profile reviews. During the experience, Pharm.D students actively engage in collaboration with DDS and DH students to address real-world patient issues.

Assessment: Evaluation of the consult service and student learning include baseline and post-surveys for Pharm.D, DDS, and DH students assessing knowledge and confidence of each discipline's scope of practice and perceptions of inter-professional communication and teamwork. Assessment of student clinical experience and ability to self-identify patients is also evaluated through student self-reflection, focus groups, faculty evaluation, and consult tracking technology.

Conclusion: The dental school clinic setting provides a rich opportunity for multidisciplinary interaction. While data analysis is ongoing, feedback from students, patients, and clinical faculty indicate the benefit of this collaboration and successful integration of pharmacy services.

TIP46. Getting to know each other & the NHS - IPE with Year 1 student nurses, doctors and pharmacists

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Keywords: Inter-professional, Team Working, Communication

Background: In 2015 the University of Bristol's Medical School, the University of West of England School of Nursing and University of Bath Pharmacy School signed a commitment of intent to work together to establish inter-professional education (IPE) sessions across all three professions to develop compassionate care.

Aim: To facilitate the development of inter-professional communication between Year 1 student nurses (SN), doctors (SD) and pharmacists (SP).

Objective: To test a method of developing inter-professional team working.

Method: A design meeting was held and indicative content agreed. Highly interactive activities were developed to promote team working, understanding of stereotyping in healthcare, the NHS constitution and the importance of clear communication.

Design: A midway refreshment break facilitated networking and sessions were compulsory for SP and SN but voluntary for SD.

Assessment: Students completed pre- and post-Likert scale-based questionnaires to test acceptability of IPE learning (questions 1 to 8) and team working (questions 9 to 15), where 1=strongly disagree and 5=strongly agree.

Results: One hundred and seventy-five students completed feedback forms and Wilcoxon Signed Ranks test was used to compare paired means from pre and post educational intervention. Of these 12 were SD, 47 SN, 94 SP and 21 not completed. All 15 questions showed statistically significant improvement in self-perceived knowledge and learning. (Table I: *p*-values 0.000 to 0.032).

Conclusion: Students learned with, from and about each other in an innovative and fun-based workshop to develop team working skills, understanding of each other's roles and methods of communication within teams.

Table I

	Question: Effect on attitudes to IPE	*z*-score	*p*-value
1	My skills in communicating with *other health care professionals* may be improved through learning with students from other health care professions	-4.163	0.000
2	I would prefer to learn only with peers from my own profession	-4.430	0.000
3	Learning with students from other health care professions is likely to facilitate subsequent working professional relationships.	-5.534	0.000
4	Learning with students from other health care professions may be more beneficial to improving my teamwork skills than learning only with my peers	-5.447	0.000
5	Collaborative learning would *not* be a positive learning experience for all health care students	-4.676	0.000
6	Learning with students from other health care professions is likely to help to overcome stereotypes that are held about the different professions.	-5.253	0.000
7	I would enjoy the opportunity to learn with students from other health care professions	-3.173	0.002
8	Learning with students from other health care professions is *not* likely to improve the service for patients	-3.411	0.001
9	I feel able to work as part of a team	-4.531	0.000
10	I understand the skills needed to work as part of a team	-4.626	0.000
11	I do *not* feel able to work as part of a team	-2.151	0.032
12	I understand the role of a registered professional in healthcare	-6.706	0.000
13	I understand my role in a multidisciplinary healthcare team	-5.906	0.000
14	I understand my potential role in providing health care for a patient	-5.400	0.000
15	I do *not* understand my potential role in providing health care for a patient	-2.846	0.004

TIP52. The "mock ward" goes global

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Keywords: Clinical Learning Experience, Clinical Teaching (Health Professionals), Simulated Environment

Objective: Feedback was provided by delegates after day one of a "train the trainer" programme delivered by the University of Peradeniya, Sri Lanka. They asked for "essential skills clinical pharmacists practice in the hospital", "clinical pharmacy workshops" and "ward based teaching" to be included on day two. The "mock ward" or simulated ward was considered a potential clinical teaching activity to include. The main objective was to up skill delegates in ward based problem solving and communication with patients and staff.

Design: A simulated ward has been used as a component of the Queensland Health pharmacy intern training week for the past decade. Four of the patient scenarios were chosen for the Sri Lankan environment. Translation of ward based materials included the use of local medication charts and patient notes templates, creation of patient owned exercise books updated at each clinic appointment called "clinic books", training of Sri Lankan academic staff as patients and ward based personnel and some imagination to create a simulated ward.

Assessment and Conclusion: Fourteen delegates from five universities took part. All delegates strongly agreed that it was interactive, it enhanced their ability to problem solve complex integrated patient cases and that it introduced new and practical methods of teaching. The objective to encourage communication requires not only a simulated ward environment but more importantly the patients and staff to talk to. The success of this session showed that the simulated ward could be translated to the Sri Lankan University with little infrastructure but good human resources.s.

TIP53. Health Education England Quality Framework: A driver for quality and improvement of the east of England pre-registration pharmacist programme

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Keywords: Quality Assurance Stakeholders, Professional Standards, Evaluation Criteria, Performance Based Evaluation

Objective: The University of East Anglia (UEA) pre-registration pharmacist programme (for hospital-based trainees in the east of England) is funded by Health Education England (HEE). The aims of this study were to:

- Conduct objective quality assessments of the programme based on six domains of the new multi-professional HEE Quality Framework (HEE, 2017)
- Create a quality improvement plan in collaboration with key stakeholders

Design: A self-assessment template was prepared to cover the quality domains and associated standards of the framework (Figure 1). The template was populated with evidences from members of the UEA pre-registration team (academic staff and placement supervisors). Self-red, gamber, green (RAG) ratings were assigned for each domain through a team exercise. Stakeholders from 12 different placement hospitals (pre-reg trainees and tutors) were asked to provide their independent RAG ratings of the performance of the UEA training programme against each domain.

Assessment: Objective RAG ratings for each quality standard were assigned through triangulation of self-assessed data with RAG ratings assigned by stakeholders from placement trusts. Focus group discussions will be used to identify individual standards not adequately met and a quality improvement plan, developed in consultation with stakeholders, will be presented.

Conclusion: The domains and associated standards of the HEE quality framework provides a holistic tool for evaluating all aspects of the current pre-reg pharmacist training programme including learning environment, culture and support for both learners and educators. The framework also provides a platform for driving quality improvements and improving patient and learner outcomes.

NHS HEE Quality Framework Domains

References

HEE [Health Education England]. (2017). Quality Framework 2016/17 (online). Available at: https://hee nhs.uk/sites/default/files/documents/HEE_J000584_QualityFramework_FI

TIP54. Inter-professional global health experience: Implementation and lessons learned for sustainability

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Keywords: Global Health, Inter-professional, Cultural Competency, Practice-Based, Rotation

Objective: Schools of pharmacy have integrated global health aspects into the curriculum; yet there is limited guidance for implementation of academic-community partnerships for global health experiences. The objective is to describe the implementation and lessons learned from an innovative and sustainable practice-based approach for an inter-professional global health experience among three healthcare disciplines over four years.

Design: An inter-professional global health experience was created based on the principle of self-directed life-long learning to facilitate future clinical practice and service in diverse populations with limited resources in the real world. Elements of the Centre for the Advancement of Pharmaceutical Education (CAPE) outcomes including inter-professionalism, cultural competency, communication, leadership, problem-solving, professionalism, innovation, and self-awareness were included in the design of the experience. The experience included sustainable effort with community partners over the years. Faculty, staff, and students completed pre and post work which included language training, tropical disease, country profile presentation, cultural competency, and physical assessment training. Innovative strategies for patient assessment and medication distribution were reviewed.

Assessment: Assessment strategies included reflection papers and inservice presentations. The Wesleyan Intercultural Competency Scale was used to assess changes in cultural competency level. Needs assessment skills and application for planning the sustainability of future missions were conducted in collaboration with host country community stakeholders.

Conclusion: Global health rotations and service-learning experiences facilitated self-directed lifelong-learning skills for students and faculty through providing real-world application over four years while benefiting underser.

Responsible Individuals: *Chief Organisers* – The two community leaders in charge of conceptualising, planning, implementing, and evaluating this public health programme. *Core Student Planners* – The small group of two student pharmacists and one physician assistant student who assisted with the recruitment process, donation requests, and assisted with the planning and implementation of the medical mission. *Core Faculty Advisors* – The small group of three School of Pharmacy faculty pharmacists and professional staff with expertise and experiences in international missions and public health. *Core Planning Team* – Chief organisers, core student planners, and core faculty advisors. *Medical Mission Team* – Four pharmacy students (one new graduate, two on rotations, and one in the second-year programme), and three second-year physician assistant students, core faculty advisors, and chief organisers responsible for running the clinic, presenting lectures to the community, and meeting local stakeholders in Haiti.

Table I: A 12-Step Process with Responsible Individuals and Timeline for Development and Implementation of a Haiti Medical Mission Based on an Academic-Community Partnership

Step	Item	Responsible Party	Timeline
1	Conceptualise an Idea	Chief organisers	≥ 6 months prior
2	Conduct a Needs assessment	Core student planners Core faculty advisors	≥ 6 months prior
3	Convene a Student Core Planning Team	Core student planners	≥ 6 months prior
4	Seek Guidance and Support	Core faculty advisors	≥ 6 months prior, ongoing
5	Collaborate with Organisations	Core student planners Core faculty advisors	3 - 4 months prior
6	Ensure Compliance with Legal and Liability Guidelines	Core faculty advisors	3 months prior
7	Promote the Haiti Medical Mission	Core student planners Core faculty advisors	3 months prior, ongoing
8	Recruit and Train Volunteers	Core faculty advisors	3 months prior
9	Adopting a Pharmacy Intervention Plan and Guideline	Chief organisers	3 months prior, ongoing
10	Put It All Together	Medical mission team	1 week prior
11	Implement the Carcasse Clinic Mission and Manage Last-Minute Challenges	Medical mission team	Day of event
12	Follow-Up and Evaluation	Medical mission team	0 – 3 months post-event

TIP55. Exploring the use of social media for active learning in pharmacy curricula

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Keywords: Social Media, Pharmacy, Active Learning

Objective: Describe strategies for implementation of social media to facilitate active learning in pharmacy curricula.

Design: A literature review was conducted to understand how social media platforms are currently used within schools and colleges of pharmacy on a global basis.

Assessment: The results of the literature search demonstrate that social media has become increasingly prevalent among pharmacy students and faculty as a form of active learning in and out of the classroom setting. Facebook is increasingly being adopted into pharmacy curricula to raise awareness on pharmacy issues to supplement in-class activity. Twitter is used for debates and blogs where students share healthcare opinions with audiences across the world. The Wikis platform has allowed for after-class discussions on health information and therapeutic recommendations. LinkedIn is used for job opportunities and professional networking with pharmacy organisations. Additionally, YouTube has been used for video representation of therapeutics information in the classroom setting to aid with lecture integration for visual learners. Other social platforms that may be used to engage students include Vine, Quora, and Go Animate.

Conclusion: Social media can be used as an innovative tool to enhance active learning among student pharmacists. Members of the profession should be prepared to capitalise on its use by engaging in training to learn how to use it as an educational tool.

TIP56. The Monash University Intern Foundation Programme (IFP) - supporting and recognising interns in practice through university and workplace partnerships

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Keywords: Pharmacy, Experiential Learning, Internship Programmes, Clinical Experience, Workplace Learning

Objective: To describe the Intern Foundation Programme (IFP), an innovative new programme for intern pharmacists, designed to recognise, support and enhance workplace learning.

Design: In 2016, a selection of hospital and community pharmacies across Melbourne, were invited to participate in the IFP. The IFP is based on university-workplace partnerships and ensures a high quality workplace programme within an appropriate learning environment that facilitates effective supervision. Regular site visits are part of the support provided by the IFP team.

The IFP involves credentialing of: workplaces, workplace learning plans, and clinical educators (CEs). To credential workplaces, organisational culture was assessed. Bespoke workplace learning plans were developed collaboratively with CEs to recognise workplace activities relevant to the practice of a pharmacist. Standardised tools and rubrics were developed for intern assessment and feedback. CEs were credentialed based on completion of formalised training and signed agreement on role expectations. An online moderated CE training programme, accredited for Continuing Professional Development, was developed and offered at no charge.

Assessment: Eighteen sites were credentialed to deliver IFP in 2016 (eight hospital, ten community) and 50 interns enrolled. Ninety-six percent of interns successfully completed the programme; two interns withdrew. Forty-seven CEs were credentialed. At completion of the IFP, 89% of interns agreed or strongly agreed that the activities of the IFP helped develop skills that will be useful in practice as a pharmacist.

Conclusion: The IFP was successfully implemented at 18 sites across Melbourne in 2016. A high standard of workplace learning was established and recognised through the IFP credentialing process.

TIP57. Using simulated patients as assessors in pharmacy Objective Structured Clinical Examination (OSCE): What are we getting?

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Keywords: Pharmacy, Feasibility, Assessment, Patient

Objective: Our aims are: 1) to evaluate the use of various types of assessors, namely pharmacist assessors (PA), non-pharmacist assessors (NPA) and simulated patient assessors (SPA) in pharmacy Objective Structured Clinical Examination (OSCE); 2) to evaluate the feasibility and acceptability of SPA in pharmacy OSCE; 3) to provide the students' an essential learning experience of mock OSCE.

Design: A mock OSCE targeted at students in their early Master of Pharmacy (M.Pharm) degree (either first or second year) is to be scheduled. It consists of four five-minute patient encounters stations. In each station, a PA will couple with a SPA (recruited from non-health sciences related lay person) who will act as simulated patient at the same time. In addition, a non-pharmacist (recruited from health sciences postgraduate degree students) will assess the students as a NPA. All the assessors (PA, NPA and SPA) will complete the same marking checklist and global rating scale but will not be allowed to discuss results at any time. Students' views of the feasibility and acceptability of simulated patients as assessors will be collected. The PA will be recruited from a pool of teacher practitioners (TP) who have been used for other pharmacy practice related teaching activities within the School.

Assessment: Assessment of the flexibility of various types of assessors involves surveys and/or interviews.

Conclusion: The findings of this study will guide the conduct of pharmacy OSCE in the future and, in particular, determine if simulated patients can be used as assessors in pharmacy OSCE and the widespread of this beneficial application through various types of OSCE stations. In additions, this study provides learning opportunities to the students to help them acquire necessary knowledge and practice their patient-care skills.

TIP58. Walking in the patient's shoes: changing medical students' perspectives on adherence

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Keywords: Compliance (Psychology), Simulation, Reflection, Discovery Learning, Medical Students

Objective: To evaluate the impact of a medication adherence activity on medical student perceptions of what managing multiple medicines means for patients; and enhance their understanding of adherence challenges.

Design: During their general practice rotation, Bond University third year medical students undertook a mandatory, seven day, personal, active learning medication simulation. Over three consecutive years, cohorts of 90-100 students were individually supplied with a patient kit of three 'medications' (manufactured by Mater Pharmacy Services, Brisbane, containing different coloured TicTaks as tablets), labelled with specific instructions: - Antibiotic: ONE to be taken every EIGHT hours, one hour before food or milk until finished - Lipid Lowering medicine: ONE to be taken at NIGHT - Diabetes medicine: ONE to be taken TWICE DAILY with food. Students became the patient; and at week end posted an iLearn Blog sharing their experiences of medication management. Narratives of posts were analysed for recurring themes.

Assessment: Students immersed themselves in the activity; but found adherence much more difficult than expected. Pill counts showed 100% adherence ranged from 69% (190/276) for 'once daily' to 21% (58/276) for 'eight hourly' regimens. Simulation significantly impacted on students' self-reported understanding of, and empathy towards the challenges of medication adherence. These future prescribers reflected on not only their (and patients') reasons for poor adherence but also provided practical strategies to improve patient adherence.

Conclusion: By 'walking in the patient's shoes', simulation medication adherence activities encourage deep learning and the potential for personal behaviour modification by future prescribers.

Table I: Narrative examples of recurring adherence themes

What did you learn from the adherence simulation?
"It was quite an eye-opener as I had never considered the patients' perspective. It gave me with valuable insight into how it feels to be on the receiving end of medications that I may one day be prescribing."
"To be a successful medical professional, I need to relate to the difficulties that patients face on a day to day basis with regard to adherence, irrespective of whether they are non-adherent intentionally or unintentionally; I felt that this activity definitely helped me with that."
"Overall I can see how polypharmacy can be a tough for many patients and I appreciate that taking a number of medications on a daily basis requires intense mental concentration, dedication and perseverance."
"It is clear that real world patients who work full time jobs and have families to look after would also struggle to adhere to their medication regimes."
"Overall this was a great experience; I was able to experience firsthand what it is like to juggle taking medications and it gave me great insight into the many reasons why patients may have poor adherence. No wonder compliance issues arise. As a future prescriber it will definitely make me think twice before prescribing a particular medication to a patient in terms of frequency, dosing and other conditions that surround its ingestion. It is a minefield out there."
"I don't think I'll be finding myself saying "really? how hard is it to take a pill? come on." anytime soon."
"In retrospect, I can see how hard it is to expect 100% compliance from our patients."
"As a future doctor, this activity allowed me to see that it isn't an easy task for patients and that as doctors we should understand of this."

Personal adherence challenges
"I initially found taking the medications for the first few days not an issue as I was curious and interested in participating in the experience and putting myself in the shoes of someone who has to take the many medicines we might be prescribing! However, as study, classes and schedules got in the way, my initial interest faded and I realised how easy it was to forget to take them. If I was personally motivated as a result of concern for my health and what taking the medicines meant for me then I would have been more compliant. I could see how it might be difficult particularly for younger patients to be compliant when they feel that they don't have a sense of control in their health."
" I did try to stay compliant; however I sometimes found it quite difficult, as it was so easy to get wrapped up in my own routine and forget …. ".
"For me, the hardest part was carrying the bottles with me everywhere. This meant that I missed out on a lot of doses during the day when I had Uni and I made up for this by "catching-up" on the missed doses when I went home. Obviously, this is not a very good idea, but I can see many patients making the same mistake as me, particularly if they live a very busy life."
"A challenge for me was the taste. This reminded me of how some patients will avoid certain medications if they experience unwanted side effects, highlighting the importance of discussing side effects and alternative treatments beforehand."
"I believe the main reason why I was not compliant was I didn't believe these medications would help me as a whole. Educating the patient on the important of their medications to make them feel better is something which I consider to be absolutely vital, or else people will not feel motivated in taking these medications."
"At first when we were given the 3 canisters I, naively, thought this would be an easy task. By the 2nd day I was already struggling. All the mediations were prescribed in different ways, to be taken at different times, without or without food. I decided to put notifications on my phone to remind me, but even then I often found I didn't have the medications on me when I needed to take them. I can imagine this task would be much harder for patients who: *1. Are unwell (hence why they're taking the meds in the first place)* *2. Don't have access to a smart phone that notifies them* *3. Old and forgetful and don't have someone to remind them.* *Because even with all the aids I had created for myself, it was a hard task."*
"The fact that my housemate and I both had to take similar medications did not help and often confused both of us as we would end up taking each other's medications."

Strategies to improve adherence
"Patients need to understand why they're taking their medication, the importance of taking their medication and what to do or what will happen if doses are missed, organise a routine for their timely ingestion, prioritise each medication."
"Non-pharmacological methods should always be explored first, as all drugs have their drawbacks."
"Reminders in the form of notifications on a mobile phone, email reminders etc."
"In terms of remembering which doses to take and when to take them in reference to meals I found that having a regular alarm reminder on my phone to be really useful. Also having a note on the fridge where I normally go to grab my meals as a reminder of when to take the medicines was useful. But more importantly I found that incorporating taking the medicines as part of my daily routine to be most useful in promoting adherence."
"Attempting to place medications in groups for the patient to remember e.g. 3 meds in the morning, 1 with lunch etc thereby setting up a routine."
"Trying to find if there is an extended release version of a medication, so as to cut down the frequency of a dose for a patient."
"Explaining what to do when they miss or forget a dose."
"Prioritising if they MUST choose, what is NOT TO BE MISSED and what if occasionally is missed would not be a big issue."
"Keeping meds to a minimum that is checking their vitamins, other naturopathic meds. Also herbal remedies etc, so that the REAL MEDS are not forgotten amidst their fish oils and glucosamine etc."
"When I read the label on the antibiotic, I was a little confused by the instructions. It made me realise that as a future doctor, I should give patients the prescription, tell them to read it in front of me and ask any questions. I realise that everyone is very busy, so this could be easily done while I update my notes, etc. If people think like me, having the information about the medication would encourage them to adhere. By giving patients this opportunity, I could increase their chances of medication adherence and of taking the medication the correct way."

Reference

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Strategies to improve adherence
"As a future health professional, I will aim to cater to the individual needs of patients to develop medication regimens that maximize compliance."
"I will hopefully be able to help patients by being able to discuss possible strategies that can be employed."
"To improve motivation, patients need to clearly understand why they need to take the medication and the consequences of not taking it - this can be communicated in both verbal and written formats"
"It should be a shared decision process between the doctor and patient as well when deciding to start a medication - the patient needs to be involved in the decision."
"Exploring the reasons for a particular patient being non-compliant with their medication."
"Webster/dispensing packs help make the process easier along with cost effective pricing of meds. Perhaps also making a chart on when exactly to take the medications would be more helpful, rather than simply stating every '8 hours'."
"I now appreciate the benefit of the blister pack, as it must make things a little easier for patients who have to take multiple medications."
"Changing the taste of the medication to something which is more digestible would encourage patients to want to take the medication, however this may cause them to use too much of the medication as well!"

TIP59. Student perspectives on the use of technology to enhance teaching and learning

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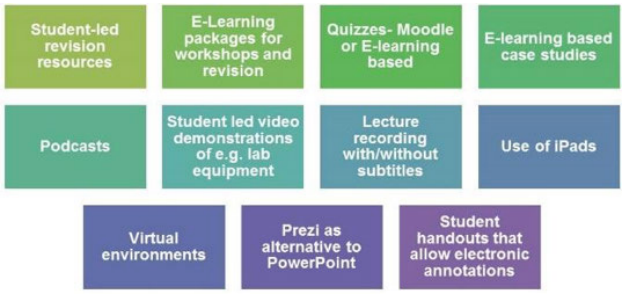
Keywords: Learner Engagement, e-Learning, Pharmacy, Teaching Methods, Technology Uses in Education

Objective: To understand student perspectives on the use of learning technologies and their ideas on how to use e-learning to enhance teaching and learning. The use of technology to support with teaching and learning is often driven by the teacher or institution. However, students may have different perspectives and identify ways in which technology could be used, that we, as teachers may not have considered previously.

Design: M.Pharm and Masters students at UCL School of Pharmacy were asked to complete a questionnaire placed on Moodle that explored their awareness and experience of learning technologies and their ideas of how technologies could be used differently. From those who responded, a small focus group of six students was also conducted to explore some ideas further. Three ideas were taken forward and feasibility pilots were developed by three students.

Assessment: Figure 1 summarises the ideas generated by the students through the questionnaire and focus group. The students involved in the feasibility pilots reflected that they required a lot more consideration than anticipated- for example thinking about what motivates students to engage in teaching activities and the importance of aims and learning objectives.

Conclusion: Whilst there are wide ranging uses for technology, we need to keep in mind how and why they may support student learning. The involvement of students in the development of teaching tools may however help them plug personal knowledge gaps and give them an awareness of how they learn.



TIP60. Development of competency panels to enable pharmacist registration in the UK

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Keywords: Competency, Hospitals, Pharmacists

Aim & Objective: Within the UK pre-registration pharmacist trainees are currently signed off as competent by their tutor at the end of their 52 weeks of training. Due to differences in expectations between tutors and the relationships built between tutors and their trainees, other healthcare professions in the UK require independent sign-off of competency for registration purposes. The aim is to develop an objective and independent approach to signing-off pharmacist trainees as competent to practice at the end of their pre-registration training period.

Method: One hundred hospital and community pharmacist pre-registration trainees across one English region were recruited into a pilot project. Ethical approval to undertake focus groups with stakeholders was obtained. Six test competency panels, consisting of a trained chair, at least two pharmacist pre-registration trainers and where available a patient and public representative, were initially conducted at the 26 week point. These panels reviewed the electronic portfolios of eight or nine randomly selected trainees each. A focus group with the six panel chairs and two focus groups with panel members was undertaken to learn from the experience.

Results and Conclusion: Wide variation in the quality and quantity of evidence collated by trainees was seen. The number of competencies to which one piece of evidence was related ranged from one to twenty-six. Greater guidance for trainees and tutors on evidence completion and mapping was identified as being required. The availability of reports from 13 week reviews and from both trainees and tutors at the point of panel review was seen as necessary to effectively assess progress.

TIP61. Using the sciences: Answering pharmacy practice problems by integrating pharmaceutical knowledge

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Keywords: Science Education, Pharmaceutical Education, Educational Principles

Objective: Socio-cultural approaches to learning value 'learning by participation', say in joint activities such as workshops – the intricacy of learner exchanges are thus equally important as the teacher's contribution. Our aim is to detail a series of workshops designed to engage pharmacy students in the application of scientific knowledge to solving pharmacy-practice problems through role-play. The objectives are to detail the development of the teaching material and its use with pharmacy students describing how students learned about the 'application of science into practice'.

Design: Three workshops were designed to focus on; missing medication doses and clinical consequences, the storage of medication in compliance aids and product instability, and identification and reporting of known and unknown medication adverse effects (see Table I). Role-plays were used, with students (in pairs) assigned separate scripts for either a 'pharmacist' or an 'enquirer' for each scenario. The pharmacist received additional 'scientific' information while the enquirer was prompted to ask a series of questions and relay specific answers when prompted. The inquiries were related to extensive pre-workshop reading.

Assessment: Students completed an inquiry plan in class detailing the nature of the problem, scientific issues, additional information required and an initial response. These were marked with feedback provided at the next workshop. The student response was overwhelmingly positive and supportive of this approach to knowledge integration.

Conclusion: Given pharmacy practice scenarios, students interacted with one another to rationalise their knowledge from across the pharmacy curriculum to formulate coherent responses based on the analysis of appropriate data. Role-plays provide a model for science-practice integration.

Table I: Detail of the workshop topics and role-plays

Topic	Drug involved	Scientific information given	Practice context
Missed doses – case 1	Paroxetine	Elimination half-life	Missed morning dose
Missed doses – case 2	Paroxetine	Elimination half-life	Missed weekend doses
Adverse drug reactions – case 1	Nitrofurantoin	Drug safety update	Patient experiencing cough and breathlessness
Adverse drug reactions – case 2	Metoclopramide	Drug safety update	Patient experiencing acute dystonic reaction
Storage in compliance aids – case 1	Valoid (branded) tablets	Chemical structure and storage information	Found to be discoloured
Storage in compliance aids – case 2	Zimovane tablets	Chemical structure and storage information	Storing halved tablets in compliance aid

TIP62. An inter-professional active learning intercultural training course

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Keywords: Intercultural, Inter-professional, Active Learning

Objective: The objective of this course was to provide intercultural education with a focus on empathy and healthcare to an interdisciplinary group of students in an honours college.

Design: This was a two-credit, 16-week course that met twice weekly for 50-minutes. The course sessions typically included an active-learning activity followed by discussion using a Thiagi de-brief format. General topics covered were Hofstedt Cultural Dimensions, mindfulness, learning styles and the four Intercultural Development Inventory (IDI) core competencies. Outside of class, students completed three service-learning activities with an on-campus organisation called Boiler Out and one required a focus on healthcare. Assignments included an intercultural development plan that used selfie documentation, on-line discussion board reflections related to service-learning activities, and completion of a Purdue University's Cultural Competence Badge programme.

Assessment: Students assessed their learning using several different scales. Each student took the IDI survey before class began and again the last week to measure changes in their cultural competence. They also took the Inventory for Assessing the Process of Cultural Competence Among Healthcare Professionals-Student Version empathy survey before and after participating in the course.

Conclusion: The majority of students demonstrated growth on each of the assessment tools utilised. Based on this data, it's possible to provide instruction on intercultural learning with a focus on empathy and healthcare to an interdisciplinary group of students in a course setting. Future plans include offering this course material as an intensive pharmacy elective, within the international/global heath work and as a continuing education programme.

TIP63. Primary care placements for hospital pre-registration trainee pharmacists - A feasibility study

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Keywords: Pharmacy, Trainees, Primary Healthcare, Feasibility Studies, Hospitals

Objective: In response to an ageing population and subsequent increase in primary care workload, the UK government is creating 2000 primary care pharmacist posts to support general practitioners (GPs) by 2020. The initiative has identified the need to train pharmacists for this role prior to registration. The aim of this feasibility study was to develop and evaluate block placements of hospital pre-registration pharmacists at GP practices.

Design: Training plans for either a four- or an eight-week placement at GP practices, were developed. The plans specified the range of competencies that could be developed within each timeframe as well as types of supervision within the GP practice and maintenance of hospital tutor support. Expressions of interest by GP practices to act as placement sites, were obtained through cascading of the training plans by Health Education East of England (HEEoE). A workbook to support trainees during their placements was collaboratively developed by hospital pre-reg managers, GPs and the UEA pre-reg training team.

Assessment: A multi-faceted evaluation is planned. This will include telephone interviews with pre-reg tutors, medical supervisors and GP practice managers and a focus group with the trainees. Aspects that will be explored include: measurable contributions to patient care and trainee experiences such as learning outcomes and support received.

Conclusion: A novel approach to offering pre-registration pharmacist placements in primary care has been developed following a broad regional collaboration. The pilot will be evaluated and if successful will be expanded across a wider geography.

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TIP64. Developing Sussex Pharmacy students' values and ethical awareness using the web-based Values-Exchange tool

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Keywords: Ethics, Debate, Cognitive Processes

Pharmacists are expected to practice ethically and abide by a code of conduct. Over the course of the degree, students are introduced to the precepts of professionalism and expected behaviour, as they develop their competencies in this area. Traditionally in the UK, the focus has been on legal issues, and not necessarily what's in a patient's best interest. Also, opportunities to explore, debate and reflect on ethical decision making, in the context of ethical models is somewhat limited.

Objective: To develop Sussex pharmacy students' values and ethical awareness, engaging with dilemmas posted on the Values Exchange (Vx)1 web-based platform.

Design: A dilemma and suggested action is posted on Vx. Students agree with, or a dissent from this course of action. One debate saw students respond to a variation of the 'Trolley Problem', which involved the sacrifice of one to save many; a second scenario, saw students consider a course of action in which they were invited to physically 'kill' a friend to save others. Students responded to each of these scenarios in turn and debated their decisions. Vx enabled their responses to be analysed by demographics, reactions to the problem, the reasons for their decisions and what they considered mattered most, amongst others.

Assessment: Responses to the two scenarios were compared, and a YouTube video: The Trolley Problem 2 watched. These enabled them to contextualise their responses in relation to their peers, while discussing the philosophy of Utilitarianism (the greatest good for the greatest number).

Conclusion: Using Vx generated lively debate and improved the students' critical and deep thinking skills.

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TIP65. To develop and evaluate a structured training programme for interns in the specialist field of women's and newborns pharmacy

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Keywords: Internship Programmes, Obstetrics, Gynaecology, Neonates

Objective: To develop and evaluate a structured training programme for interns in the specialist field of women's and newborns pharmacy

Design: In 2016 a structured two-week training programme was developed for interns rotating though the women's and newborn team in a quaternary teaching hospital. A set of learning outcomes were developed specifically for obstetrics (n=17), gynaecology (n=4) and neonatology (n=4). In addition a series of tasks were developed to align with learning outcomes including; presenting a case, self directed scenarios and questions relating to pregnancy and breastfeeding. Five interns rotated through the training programme and feedback was obtained from each intern.

Assessment: The feedback was overall very positive. In total interns agreed positively that obstetric learning outcomes were met in 92% of cases, gynaecology in 95% of cases and neonatology in 85% of cases. Some comments indicated that 'there was a great balance between one-on-one time, education with pharmacists, self-directed learning and independent time on the wards'. In addition some interns commented that they 'gained a lot of self confidence in their own ability' whilst working with the team.

Conclusion: The programme designed specifically for pharmacy interns within the women's and newborns team, utilised adult learning principles, experiential learning, self-directed learning and student engagement principles. The training programme was well received by all interns and in 2017 the rotation has been extended to five weeks.

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TIP66. Enhancing the teaching of diagnosis in the pharmacy using Augmented Reality (AR)

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Keywords: Clinical Diagnosis, Pharmacy, Technology

Objective: The development of the new M.Pharm curriculum at the University of Bath has led to opportunities to enhance the fidelity of the classroom based teaching. Augmented Reality (AR) layers digital information onto scenarios to enhance the reality of the situation. This paper describes a two phase pilot to use AR techniques to support the teaching of diagnosis in the pharmacy.

Design: Academic staff developed a series of case vignettes to support the teaching of simple diagnosis making in the pharmacy. In phase one, to enhance the fidelity of the symptoms being described, audible cough sounds were created using Aurasma. These were used during Applied Pharmacy Practice Skills (APPS) classes. Student's views were captured after the teaching intervention to review the acceptability of this tool and the wider application of this technology. In phase two during the next semester symptoms will be overlaid with skills of developing differential diagnostic skills and this evaluation also presented.

Assessment: Students agreed that the addition of the AR coughs made the workshops more authentic and allowed the students to differentiate between symptoms. Students also thought that images could also be used in this context in different disease states. Phase two will evaluate the use of this AR technique in supporting the process of differential diagnostic skills.

Conclusion: Augmented Reality techniques have the potential to enhance classroom teaching and bridge the gaps between this and practice based learning. Students enjoyed the interactive nature of the intervention and thought it made the scenarios more realistic.

(This is work in progress and both phases of the evaluation will be presented on the poster. Phase two is timetabled in Feb/Mar 2017).

TIP67. A programme evaluation and research methods curriculum to prepare future pharmacy leaders for practice-based improvement initiatives

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Keywords: Programme Evaluation, Workforce Development, Pharmacy, Evaluation Methods, Evaluation Research

Objective: To describe the design and implementation of a course aimed at equipping aspiring pharmacy leaders with necessary skills for programme development, evaluation, and quality improvement within a practice-based environment.

Design: Evaluation Research and Project Design is a required semester-long course in the first semester of the Health-System Pharmacy Administration master's degree programme. The course provides formal instruction on evaluation research, study design, and data analyses that are necessary for effective programme evaluation of commonly encountered workplace programmes and initiatives. It also mentors each student through the development of a research idea, such that at the end of the course, the thesis substitute project proposal is written.

Assessment: Since its implementation in 2014, 26 students have completed the course. In an optional and anonymous survey (n=21, 81% response rate), all respondents agreed or strongly agreed on a 5-point scale that the course was well organised (median, range: 5, 4-5) and challenged students to think deeply about the subject matter (median, range: 5, 4-5). All respondents also rated the course as (4) very good (n=9) or (5) excellent (n=12). Projects developed in the course have resulted in grant funding, publication, and national recognition.

Conclusion: Integration of a required evaluation research and project design course into a health-system pharmacy administration masters degree curriculum provides formal evaluation training for aspiring pharmacy administrators. Extending this curriculum to other pharmacy programmes could help advance our quality improvement initiatives in the practice environment.

TIP68. Foundation training and development: time for an Australian hospital pharmacy residency programme

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Keywords: Clinical Teaching, Accreditation Standards, Student Evaluation, Professional Development

Objective: Foundation training and development are critical for newly registered professionals to consolidate their formal academic education and apply this knowledge in real and complex workplace settings. The International Pharmaceutical Federation (FIP) has emphasised the importance of foundation training infrastructures (Goal 2) in its Pharmaceutical Workforce Development Goals. Unlike the USA, UK, Singapore and Canada, Australia has not previously offered a formal programme of foundation training in a residency programme.

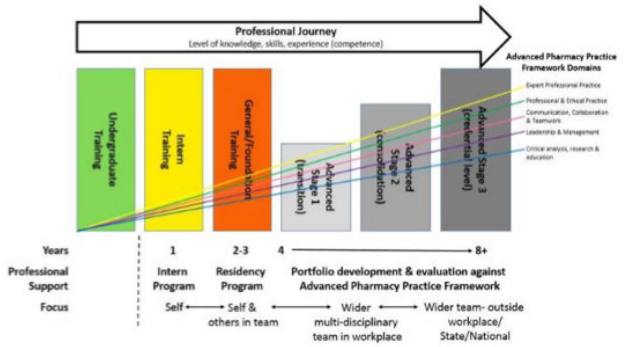
Design: In 2017 the Society of Hospital Pharmacists of Australia (SHPA) implemented a structured, formalised, supported and accredited national residency programme for early-career hospital pharmacists. The SHPA residency is a two-year professional development programme designed to support pharmacist practitioner

development towards competence and performance aligned with Stage 1 (Transition Level) of the Australian Advanced Pharmacy Practice Framework.

Assessment: SHPA has developed robust accreditation standards to support the design and structure of hospital pharmacy residency programmes. Thirty-two pharmacy departments servicing 54 hospitals were evaluated against the SHPA accreditation standards. Thirty hospital pharmacy residency programmes were provisionally accredited and over 130 resident pharmacists will commence their programmes in 2017. Residents will rotate through a diverse programme curriculum including clinical practice, leadership and management, education, and research. Evaluation, feedback, and reflection using evidence based tools are integral components of the programme.

Conclusion: Foundation training offered by the SHPA Residency Programme adds to the formalised practitioner development framework for pharmacy, and defines the pathway from undergraduate through to advanced practice.

Figure 1: SHPA practitioner development pathway linking foundation practice and advances practice



TIP69. Providing an observational orientation placement for undergraduate pharmacy students prior to integrated pre-registration training: Identifying the benefits and challenges

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Keywords: Pharmacy, Observational Learning, Undergraduate Students, Pharmaceutical Education, Student Placement

Objective: To evaluate the benefits and challenges of an observational orientation for undergraduate pharmacy students as part of an integrated M.Pharm.

Design: Employers identified that to facilitate transfer into pre-reg an observational orientation may be useful. A placement was held for the first cohort of UEA M.Pharm with placement students, prior to starting their first six month pre-reg placement in July of Year 4.

On placement, the students were supervised by pharmacy staff, in most cases, their pre-reg tutor and current pre-regs. The students spent time in various departments in their allocated hospital observing practice, whilst building relationships and gaining an insight into pre-reg training.

Feedback was collated after the placement from students and tutors to determine the benefit of the orientation, and whether changes were required before the 2017 cohort start their placements.

Assessment:

- Students felt better prepared/more confident for pre-reg training
- Students can maximise opportunities provided during pre-reg training from day one as other than induction, they will not be required to spend time initiating relationships/orienting themselves
- Students started thinking about their own strengths and weaknesses
- Significant QA of pre-reg training for this course at UEA, therefore benefits for patients, pharmacy and NHS in the long term. Placement appears to have had a positive impact in terms of knowledge that students applied to year 3 exams
- Finding the most appropriate time to carry out the placement - Easter busy time for trusts, exam revision time
- Finding short term accommodation for students

Conclusion:

- Important for undergraduate trainee to spend time with current pre-registration tutor
- A handbook should be provided to give basic structure
- One week may be sufficient

TIP70. The role of a peer support network in promoting and supporting culture change in the area of pharmacy CPD

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Objective: The introduction of a new continuing professional development (CPD) system in Irish pharmacy represented a significant culture change from an inputs driven approach which focused on continuing education to a systematic, needs-based, outcomes-focused process of continual learning and development.

Design: In November 2013, expressions of interest were sought on a nationwide basis, from pharmacists who would be interested in working as part of a peer support network to support the activities of the Irish Institute of Pharmacy (IIOP), the body responsible for the establishment of the CPD system in Ireland. From these applications, 35 pharmacists were selected, based on

geographical location and prior experience in CPD, to form a peer support network (PSN) in February 2014.

Assessment: Evaluations have been carried out with the PSN periodically over the past three years. A series of focus groups were held in March 2017, three years after the network was first established, to explore the views of the peer support pharmacists on their role within the PSN and how the network should evolve to support future needs of the profession.

Conclusion: The Peer support network has clearly played an extremely important role in supporting culture change in the area of CPD. Whilst early initiatives focussed largely on the two-way transfer of information between the IIOP and the pharmacy profession, as the CPD system evolved, the roles of the PSN also evolved and the activities of the peer support pharmacists started to diverge. The insights from the focus groups provide an important guide on how the Peer Support Network should evolve in future years to support the continuing journey of the profession.