# Life Long Learning in Pharmacy Conference 2023: Blazing new trails

*Oral presentation*

### Widening access and pandemic pivots: Assessment for learning through an innovative, customised mixed method online admission instrument for intrinsic attributes

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**Background:** Admission processes increasingly emphasise broadening access and measuring intrinsic skills. This study examined the appropriateness of a mixed methods asynchronous online recorded test combining blueprinted, validated, weighted assessments to help discriminate between large numbers of admission applicants.

**Methods**: Intrinsic attributes were assessed in applicants (N=608) through ten recorded verbal responses, written passage responses and multiple-choice questions. In verbal recordings, applicants responded to objective and reflective questions related to standardised scenarios assessing interpersonal, cognitive and decision-making skills. The written passage and MCQs addressed both attributes [AS1] and English skills. Trained assessors used global ratings, noting red flags performances. Applicant results were compared to pre-launch (2nd to 4th-year students) and concurrent pilots (1st-year students; recent graduates). The conjunctive pass score combined weighted cut scores for each component. Results were merged with GPAs to determine and rank acceptable applicants.

**Results:** Widening access by decreasing required courses, eliminating PCAT, and creating an online admission situational judgement assessment resulted in a 340% increase in applicant numbers, a 10% increase in female applicants, and higher minimum and average GPAs on entry.

All three formats showed appropriate means and discrimination individually and when combined in a weighted average. Reliability coefficients were acceptable (written- α, ω = 0.90; verbal- α, ω = 0.70). Verbal responses performed well independently ($p < 0.001$) and contributed positively to overall results. Unprofessional behaviours were infrequent; such applicants also received lower scores. Assessor and applicant survey feedback was positive.

**Discussion:** Removing barriers by streamlining admission criteria and providing an online assessment instrument widened access and positively influenced admission applications. The screening instrument was effective, discriminating well between applicants with an acceptable pass rate and providing evidence of integrated competencies derived through multiple measures and perspectives.

### Developing "deadly pharmacists" training to equip pharmacists with the skills needed to work within Aboriginal Community Controlled Health Services (ACCHSs)

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**Background:** The Deadly Pharmacists training course was co-designed by the Pharmaceutical Society of Australia and the National Aboriginal Community Controlled Health Organisation to equip pharmacists with the skills needed to work within Aboriginal Community Controlled Health Services (ACCHSs). The need for this training was identified during the recently concluded IPAC Trial.

The IPAC (Integrating Pharmacists within Aboriginal Community Controlled Health Services to Improve Chronic Disease Management) Trial provided evidence supporting the positive impacts on health outcomes of pharmacists working within ACCHSs.

**Methods**: The development of the Deadly Pharmacists training course used the following methods:
1. Review of literature to understand the contemporary methodology for embedding cultural safety in pharmacist education
2. Learnings from IPAC Trial pharmacists and project partners
3. Extensive stakeholder consultation via online survey to pharmacists and ACCHSs
4. Direct engagement with organisations from the pharmacy and Aboriginal health sectors

Extensive feedback received was thematically collated into overarching topics for course inclusion.

**Results:** Encompassing Aboriginal co-authorship and/or review in all aspects of content development, the Deadly Pharmacists course comprises seven hours of online CPD-accredited self-paced learning. Instructional design elements feature videos of pharmacists within ACCHS settings, plus bespoke animation to encourage reflective thinking. Practice support tools were also developed to complement training and to support pharmacists and ACCHSs in the implementation of this integrated model of care.

Following its release in July 2022, more than 900 pharmacists across Australia have already enrolled to undertake the Deadly Pharmacists course, significantly up-skilling the profession at a national level to work within the ACCHS sector.

**Discussion:** As medicines experts, appropriately trained and culturally responsive pharmacists are well placed to address the significant ongoing health disparities experienced by Indigenous Australians. The Deadly Pharmacists course is fundamental to preparing the pharmacist workforce to engage in this evolving career pathway and supports pharmacists on their lifelong cultural learning journey.

# Assessment of medication adherence in patients with chronic conditions attending a primary health care centre in South Africa

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**Background:** Drug adherence in healthcare is defined as the extent to which a patient's behaviour in terms of taking medications with respect to timing, dosage, frequency and keeping up appointments with physicians. The study assessed South African patients with chronic conditions for treatment adherence and factors that impact it.

**Methods**: This was a quantitative study involving questionnaires with face-to-face interviews with 80 patients suffering from chronic illnesses from June 2022 to August 2022. Data were collected, and variables of interest were checked for completeness and consistency using mechanistic analysis of data. The pre-coded data were entered into Excel, analysed according to categorical variables, and presented using frequency tables, percentages, and graphs.

**Results:** There were more females (56.25%) than males (43.75%), with the majority in the age range of 41-50 years having a secondary level of education. The majority were singles and permanently employed, earning ≤ZAR5000. Most patients (47.51%) suffer from HIV/AIDs, and 41.25% reported adhering to their chronic-illness medication; only 12.52% indicated they were given some health education about their chronic conditions, the reason for taking their medication and the importance of adhering to medication. The means of transport to the clinic were 87.41% public transport, 9.11%, and 3.48% used their cars. Patients (41.25%) stated that they defaulted on their treatment. Reasons given were: (24.24%) not understanding the importance of adhering to their medication and possible consequences. Others (18.18%) due to side-effects of treatment. Some patients (12.12%) stated their reasons for not having money to go to the clinic to collect their medication, denial (9.09%), feeling better (9.09), stigma (6,06) and stockouts 6,17). Since 47.50% stayed in rural areas, 87.41% were dependent on public transport to get to the clinic, which requires money.

**Discussion:** The study is of novelty in its field because it focuses on neglected questions in adherence research. To the authors' knowledge, it is the first to address the neglected subject of adherence to chronic medication in the general population. Poor socioeconomic status seems to be a major contributing factor to non-adherence. Patients mentioned missing their treatment due to not having food and cannot take medicine on an empty stomach. The patients knowing these factors can improve pharmacist's education about adherence to chronic treatment.

## Pharmacy students working with museum collections to explore the history of the profession – A case for object-based learning

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*Keywords: Active learning, Communication, History of pharmacy, Museum collections, Object-based learning, Pharmacy education, Sensory learning, Student engagement*

**Background**: The historical development of the pharmacy profession shapes contemporary practice. However, fostering student engagement with historical concepts through text-based materials remains challenging. Humanist disciplines readily use museum collections and object-based learning (OBL). Such approaches, while pedagogically promising, are underutilised in pharmacy education.

**Methods**: The authors implemented an OBL workshop for 300 first-year undergraduate pharmacy students. Students worked in five small teams of 5-6 people handling museum objects from a curated collection of artefacts related to pharmacy. Across three activities, students critically inquired about an artefact's function, design, and relationship to modern-day pharmacy practice. Baseline and post-workshop changes in student attitudes toward learning about the history of pharmacy were compared.

**Results**: A total of 166 and 127 students responded to the baseline and post-workshop survey, respectively, giving rise to 64 matched pairs who were mostly female (66.7%) with a mean age of 19 years (SD=2.3). Following the workshop, students reported greater interest in learning about the history of pharmacy (82% *vs*. 89%, Z= -2.696, *p* = 0.007) and a greater understanding of the pharmacy profession (89% *vs*. 95%, Z=-1.970, *p* = 0.049). Overall, upon completion of the workshop, 96.1% of all survey responders (n= 112/127) reported being satisfied with their learning experience at the museum.

**Discussion**: Using a museum collection as part of an OBL workshop stimulated student interest and motivation to learn about the history of pharmacy. Preliminary findings suggest the scope for OBL to be further adapted into new areas of skill development within pharmacy education.

## Implementation and evaluation of Entrustable Professional Activities for provisionally registered (intern) pharmacists in Australia

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**Objective.** The purpose of this study was to describe the implementation and evaluation of Entrustable Professional Activities (EPAs) for a pharmacy Intern Training Programme in Australia.

**Methods.** Surveys and focus groups were used to evaluate the perceptions and experiences of interns and pharmacists using the EPA framework as an assessment tool in the workplace. Thematic analysis was used to analyse the focus group data. Surveys compared the frequency and median responses to the Likert scale items. Entrustment levels at 6, 13, and 26 weeks and completion of supervised practice were reported for each EPA.

**Results.** In the evaluation phase, pharmacist (n=6) and intern (n=8) focus groups identified the following themes: utility and feasibility of the EPA framework in the workplace, benefits and challenges of using the EPA framework and future direction and recommendations for using the EPA framework in the workplace. Interns enrolled in the study (n=40) showed progression in entrustment levels at each reporting period.

**Conclusion.** Pharmacists and interns reported that EPAs were feasible and could be utilised in the workplace as an educative tool; however, they highlighted the importance of education as an important factor for successful implementation. At each milestone, interns showed progression of entrustment level. Future research should not just include the development of EPAs but shift to a focus on implementation and evaluation of the feasibility and utility of EPAs to assess interns in the workplace setting.

## Pharmacist perspectives on dermatology education in pharmacy curriculum: "Enthusiasm and competency of pharmacists."

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**Background**: Chronic skin conditions, such as atopic dermatitis and psoriasis, require long-term management. Community pharmacists are well placed to support patients in this but need a level of competency in management to do this well. The authors explored pharmacists' views on dermatology education in the pharmacy undergraduate curriculum.

**Methods**: This qualitative study used semi-structured interviews to collect the data. The interviews were carried out face-to-face or online with community pharmacists in the UK between December 2022 and March 2023. Pharmacists were asked about their views on dermatology education in the pharmacy curriculum as well as the role of pharmacists in dermatological care. All interviews were transcribed verbatim, and transcriptions were transferred to NVivo software for analysis. Thematic analysis was conducted by first line-by-line coding, and then data-derived codes were turned into emergent themes using an inductive approach.

**Results**: Ten community pharmacists were interviewed. Key concepts identified were enthusiasm and competency. Pharmacists appeared eager to run dermatology clinics in community pharmacies because they will be independent prescribers soon in the UK. Pharmacists were confident in diagnosing and treating dermatological conditions. However, most pharmacists wanted to diagnose rashes accurately as they felt unconfident in distinguishing the type of rash presented and generally referred patients to specialists for diagnosis. Pharmacists shared that picture-based education was not effective in practice due to not showing the diversity of patients. Additionally, pharmacists felt dermatology education was mostly theory-based rather than practice-based.

**Discussion**: Pharmacists wanted to run clinics but found diagnosing skills insufficient because of picture-based theoretical education. The focus of education should change to improve diagnostic skills. This work provides evidence for organisations working towards FIP Development Goals 2, 5, and 15 – to support early career training to develop competencies to deliver people-centred care.

## Advancing practice 2.0: Developing an updated practice recognition programme

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**Background**: In 2017, The Society of Hospital Pharmacists of Australia (SHPA) acquired the previously developed and piloted Advancing Practice (AP) credentialing programme. The programme, built to demonstrate the expanding practice of the profession, hadn't achieved widespread engagement by 2020. SHPA made the decision to put the programme on hold for review.

**Method**: An external consulting agency was engaged to lead the initial review. This process consisted of:
- Initial qualitative surveys with SHPA members, past participants in the credentialing programme and key opinion leaders
- Internal workshops to clarify organisational programme objectives
- Pharmacist focus group sessions to explore:
  – pharmacists' needs and challenges
  – identify evidence of demand/weaknesses of the existing AP credential
  – identify opportunities for future programme

Based on the findings of this work, an expert pharmacist was brought in to develop new model options through a consultative process.

**Results**: Key concepts of acknowledgement, patient care, identity, career progression and contribution to the profession were identified, and models were developed and tested with this brief.

A merit-based system mapped to the National Competency Standards Framework was developed, which attributes credit points to accredited weighted activities individuals can complete to demonstrate ability against each domain. Activities include workplace-based assessments, soft skill demonstrations and professional contributions.

Individuals will reach a consensus level of practice once adequate merits have been achieved across all domains, at which point they will be acknowledged for practice at the relevant level.

**Discussion**: Feedback from the consultative process was positive in support of the merit-based system. The main concerns were around maintaining professional meaning and ensuring a robust process for identifying a consensus level of practice.

Work continues on the development of the programme incorporating current feedback and will undergo subsequent consultation in due course.

## Evaluating the impact of a prescribing workshop on the accuracy of junior doctor prescribing practice in the workplace

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**Background:** Practical prescribing sessions at induction are recommended to reduce prescribing errors by postgraduate year one doctor (PGY1s). This study investigates whether a pharmacist-led prescribing workshop improved the prescribing accuracy of 2019/2020 PGY1s (Cohort 2) who attended a workshop compared to that of 2018/2019 PGY1s (Cohort 1) who did not.

**Methods**: A list of patients admitted to the hospital in the final week of Q1 (3 months post-induction) for each cohort was obtained. Only specialities with at least one PGY1 allocated to the service were included.

These patients' drug charts were reviewed to identify medications written by PGY1s in the respective cohorts. The accuracy of prescribing these medicines was then assessed against fourteen best practice concepts developed from local and national prescribing guidelines. The aim was to audit the prescribing of at least 50% of each PGY1 cohort. Descriptive analysis was undertaken, and prescribing accuracy rates were compared using chi-squared tests.

**Results**: Seventy-nine charts (398 medications) were audited for Cohort 1, and 67 charts (260 medications) for Cohort 2. Both met the target sampling of ≥50% PGY1s.

A statistically significant reduction in errors was seen for Cohort 2 ($c_2$=30, df=3, $p < 0.001$) compared to Cohort 1. Assessment against prescribing concepts found at least one error in 77% *vs* 61% of medicines prescribed (Cohort 1 and 2 respectively), at least two errors in 37% *vs* 20% of medicines and at least three errors in 15% *vs* 5% of medicines. Further analyses showed statistically significant improvements across the range of different best practice prescribing concepts for Cohort 2 compared to Cohort 1.

**Discussion:** A pharmacist designed and led a practical prescribing workshop for junior doctors (PGY1s) to improve prescribing accuracy and reduce prescribing errors in the workplace three months after the educational intervention.

As PGY1s prescribe approximately two-thirds of hospital prescriptions, this is an important contribution towards minimising patient harm.

## Continuing Professional Development (CPD) for New Zealand Pharmacists – It's "pointless"!

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**Background:** In April 2021, the Pharmacy Council of NZ (Council) introduced a new recertification (relicensing) framework for pharmacists informed by contemporary thinking on what influences competence. CPD requirements moved away from the previous points-based system to a high-trust system that gives pharmacists more flexibility and autonomy over their CPD activities.

**Methods**: The Council recently completed a "*mini-evaluation*" of the new MyRecert CPD system to gain an understanding of how pharmacists experienced the first year of the new framework. The authors wanted to learn whether pharmacists had understood the requirements, found the online platform easy to use, and whether requirements had been met to the expected standard.

**Methods**: The evaluation consisted of three parts: a survey sent to all NZ pharmacists, a facilitated focus group and an independent review of 50 randomly selected portfolios. Lessons from the evaluation will inform a post-implementation review of MyRecert after the 2022/23 recertification year is completed.

**Results**: Consistent themes identified by the three evaluation reports were:
- Pharmacists generally did a good job meeting the requirements of a new system.
- Compliance levels were high and in line with previous years.
- Many pharmacists did not understand (believe) that MyRecert is a high-trust system that gives them autonomy to choose learning activities relevant to **their** practice.
- Critical reflection is integral to safe and competent practice but does not come easily to all pharmacists.
- Indications are that learning undertaken to support cultural safety was largely "*surface*," and there is an opportunity to support pharmacists in engaging in more meaningful activities.

**Discussion:** CE hours and points are commonly used by professional regulators. The council's move away from this approach was not universally welcomed by NZ pharmacists. This may have been more due to an inherent resistance to change than the framework adopted. The authors' initial evaluation indicates that the transition has been reasonably smooth, and pharmacists value a more flexible approach to CPD.

## Developing a feedback instrument for pharmacy education supervisors

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**Background:** Educational supervision provided by the Centre for Pharmacy Postgraduate Education (CPPE) supports pharmacy professionals in England transitioning to primary care to progress their education, manage workplace challenges and practise safely. With an increased emphasis on the professionalisation of clinical educators, education supervisors need to demonstrate they are fulfilling role requirements, including seeking learner feedback. However, no suitable instrument exists.

**Methods:** The study was conducted in two phases. In the development phase, a 20-item online feedback instrument was developed using a four-round e-Delphi study with 10 CPPE education supervisors as expert panel members. In the pilot phase, 100 learners enrolled on the CPPE primary care pharmacy education pathway were invited to test the instrument anonymously by using it to give feedback about their current education supervisor. Instrument performance was assessed using a range of techniques, including item-total and item-item correlations, internal consistency (Cronbach's alpha) and factor analysis (principal component analysis with Varimax rotation).

**Results:** A total of 50 learners (50%) responded to the survey. Two items were unanswered by four participants, indicating potential misunderstanding, and so they were discarded. Cronbach's alpha for the instrument as a whole was 0.966, indicating a high level of reliability. Inter-item correlations varied from 0.159 to 0.965 ($p$ <0.001). Item-total correlations were all above 0.487 ($p$ <0.001). Data analysis showed the instrument was suitable for factor analysis (KMO = 0.749; Bartlett test significant, $p$ < 0.001), with a two-factor solution accounting for 81.1% of the variance. These factors were entitled "*learning support*" and "*personal support*".

**Discussion:** Arising from a robust development process, the 18-item feedback instrument for pharmacy education supervisors is a valid tool that can be used to collect evidence of performance. The instrument will be rolled out to education supervisors to use as a tool for self-reflection prior to the annual performance review.

## Standardised tools to support learners throughout their career development climb

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*Keywords: Learning support tool, Work-based Learning, Workforce development*

**Background:** NICPLD is responsible for the development of the pharmacy workforce in N. Ireland and delivers a range of programmes to support practitioners at all career stages and in all sectors of practice. Many pharmacists will engage in a number of different workforce development programmes throughout their pharmacy career, beginning with pre-registration training and culminating in advanced practice.

**Methods:** Whilst the level of competence required to be demonstrated within these programmes varies and increases in complexity with career progression, all of the programmes require individuals to evidence a competency framework within the workplace setting under the mentorship of a more experienced practitioner, typically a pharmacist. As the Postgraduate Deanery (training provider), NICPLD must, therefore, support both trainees and their mentors throughout their career development journey across the programme continuum. To do so, NICPLD has adopted the use of standardised tools/strategies, which have established consistency across the range of workforce development programmes, making engagement easier for both trainee and mentor.

**Results:** The standardised tools/strategies used across the workforce development programmes include:
Common infra-structure- all training takes place under the supervision of an appropriately trained mentor and in an environment supportive of trainee learning.
An online hub/dashboard – this is a central repository for all support resources.

ePortfolio – enables the trainee to upload evidence and map it to the appropriate competencies within their programme framework. Evidence can be assessed by the mentor, providing ongoing review and feedback.

Blended learning approach – to complement work-based training and facilitate access to learning, all programmes are supported by workshops, webinars and eLearning.

**Discussion:** This standardised approach across the workforce development programmes optimises trainee learning and facilitates learners' transitioning between programmes throughout their career journey. It also allows experienced practitioners to more effectively mentor trainees due to familiarity with the tools and strategies used consistently throughout the programmes.

## Self-reflection and peer-assessments effect on pharmacy students' performance at simulated counselling sessions

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**Background:** Verbal communication is a vital skill for pharmacists and essential for improving patient care. The aim of this study was to explore students' perceptions of the impact of self-reflection and self- and peer-assessment on simulated patient counselling sessions.

**Methods:** Focus groups explored student perceptions of how this course and way of learning has impacted their performance at counselling patients. Data were analysed using iterative inductive thematic analysis procedures and mapped to the self-determination theory.

**Results:** Nine focus groups with 47 pharmacy students. The authors identified three main themes and ten associated subthemes. These were learning style (sub-themes gradual introduction to assessment, learning through self-reflection videos, authentic assessment, individual learning compared to group learning, and learning through observation of best practice), feedback (sub-themes inconsistent feedback, summative feedback, perception of self and relationship with peers informing peer assessment) and benefits in real life practice. These themes mapped well to self-determination theory and highlighted that additional focus may be required for benefits in real-life practice.

**Discussion:** Students' perceptions of self-reflection and self- and peer-assessment centred on learning style, feedback, and benefits in real-life practice. Additional focus on the benefits of this unit of study in real-life practice and work-integrated learning on placements may further strengthen the impact of these learning activities.

## Palliative care education in an Australian undergraduate pharmacy curriculum: An exploratory descriptive study

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**Background:** The role of the pharmacy profession in the multidisciplinary palliative care team is increasingly recognised. Despite acknowledging the importance of learning more about palliative care, pharmacists have rated their knowledge of palliative care topics as poor. Enhanced knowledge, skills and capabilities of community pharmacists have been identified as a priority area. This study aimed to examine undergraduate pharmacy students' self-perceived knowledge, confidence and preparedness to provide palliative care.

**Methods:** A descriptive exploratory analysis was conducted in 2021 at an Australian university involving final-year pharmacy students (n=200) who were provided with the opportunity to complete a survey on self-perceived knowledge, confidence and preparedness overall and with respect to a range of graduate capabilities which are essential to provide care in palliative care settings. Key capability areas include communication, showing empathy, making clinical judgements and self-reflection. This was measured using the Palliative Care Curriculum for Undergraduate (PCC4U) Questionnaire, distributed electronically. Descriptive statistics was undertaken, and Mann-Whitney U tests were used to explore any differences in outcomes with respect to factors related to demographics, personal experience and education. Thematic analysis was utilised for qualitative data.

**Result**s: Forty-five percent of the student cohort (n=89) responded, 70% of whom were female, and the median age for students was 22 years. Median scores (IQR) were modest for overall self-perceived knowledge: 5.0 (3.0-5.0), confidence: 4.0 (3.0-5.0) and preparedness: 4.0 (2.5-5.0). Students who had participated in learning about palliative care through clinical placements (n=25, 28%), self-directed learning activities (n=18, 20%), or case-/problem-based learning (n=14, 16%) demonstrated a statistically significant increase in overall preparedness ($p$ =.017), confidence with specific capabilities including evidence-based practice ($p$ =.013), responding to medication queries ($p$ <0.05) and managing symptoms other than pain ($p$ =.018).

**Discussion:** Findings suggest students were confident in managing symptoms and medication-related issues but less confident in addressing distress or discussing sensitive matters with patients and their families. There may be a need

for greater exposure and practical experience in palliative care settings.

## How to succeed in dispensing: Helping the COVID generation transition to a lab skills-based pharmaceutical compounding unit

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**Background:** Pharmaceutical compounding is a core competency for Australian pharmacists. At the authors' university, the relevant unit is only offered face-to-face, and there is a focus on achieving competence. Both aspects represent a significant departure from students' previous experiences (particularly for the COVID generation who have spent the first two years of their degree learning online). Therefore, there is a need to assist students in transitioning to this new teaching style and prepare them for competency-based assessments.

**Methods:** The principle of constructive alignment- where learning outcomes are articulated, assessments are designed to match outcomes, and learning environments facilitate achievement of these outcomes- underpins the authors' approach. Three new activities were introduced:
- A "*How to succeed in dispensing*" workshop where students were introduced to key resources and completed activities that helped them to identify and use key sections of resources and practised key skills such as writing methods and labels
- A practice written exam workshop where students completed a practice exam of the same format as one of their summative assessments under exam conditions, and then answers were discussed in the class as a group. Students were provided copies of the answers and could re-attempt the quiz after the workshop.
- An extra practice practical exam of a similar format to a hurdle task for the unit

**Results:** A total of 215 students were enrolled in the unit and completed these new activities in 2022. Students reported that they found these activities useful. There appeared to be a greater understanding of resources such as the grading rubric and how students are assessed in the unit in the authors's conversations with students, and fewer students have contacted us to ask for marks to be reviewed. Results for both the practical and written exams were also improved compared to previous years, with a higher average mark for the written exam and fewer students failing both the written and practical exams.

**Discussion:** Constructively aligned learning activities can assist students in transitioning to unfamiliar learning environments, increasing their understanding of learning and assessment activities, and mastering essential pharmaceutical compounding skills.

## It doesn't test what we want. It is Tweaking online exams to better assess student understanding and skills in a lab-based pharmacy unit

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**Background:** Pharmaceutical compounding is a key competency for Australian pharmacists, and the skills of identifying suitable formulations and methods to prepare compounded products underlie a pharmacist's ability to compound safe and effective products. At the authors' university, these skills are assessed via a final written exam, which is a daunting task. However, with the move to online exams due to the COVID-19 pandemic, students are increasingly not attempting to write methods and can pass the unit without demonstrating competence in this skill. There is, therefore, a need to explore the reasons for this and adjust how the authors assess this important skill.

**Methods:** Students reported that, with the move to online exams due to COVID, they do not have enough time to complete all questions, and some felt significantly disadvantaged by their typing speed in this exam. Given the comparatively large time needed to write methods (which may be over 20 steps long) compared to other questions (such as calculations), they either do not attempt these questions or leave this until last and may not finish their response.

Two adjustments were made. Students were provided with an additional 30 minutes in their exam, and the mark-to-time ratio was adjusted to give a suggested time of 2.5 minutes per mark (up from 1.5 minutes per mark in 2021). Marks for methods questions were also increased to 8 (from 5 in 2021) and are now higher than the marks allocated to all other question types.

**Results:** Student performance on this exam improved following the implementation of these changes, with a higher average mark (58% *vs* 66%), a much smaller proportion of students failing (4% *vs* 23%) and a higher proportion achieving HDs (19% *vs* 6%) compared to previous years. The proportion of students who did not attempt or complete the methods question dropped from 21% in 2021 to under 4% in 2022.

**Discussion:** Student feedback provided valuable insights into why this exam did not assess important skills. Adjusting the

assessment in response to this feedback improved student outcomes and allowed them to demonstrate competence at a key pharmaceutical compounding skill.

## Teaching pharmaceutical compounding skills through competency-based assessment

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**Background:** Pharmaceutical compounding is a core competency for Australian pharmacists and requires the integration of a range of abilities, skills and knowledge. Therefore, a competency-based learning and assessment approach is most appropriate for this content, and a competency style of marking is currently used at the authors' university. However, this does not align well with the current approach where marks are assigned, as students may not demonstrate competence in key aspects and yet still pass the unit. The authors, therefore, sought to convert the pharmaceutical compounding unit to a grade-only competency-based unit.

**Methods:** The unit was redesigned with a focus on competency-based learning and assessment and constructive alignment. The authors identified a number of key competencies related to pharmaceutical compounding and dispensing in the current unit that would form the backbone of the new unit. These were compounding safe and effective pharmaceutical products and completing associated documentation for compounded products, pharmaceutical calculations, Pharmaceutical Benefits Scheme (PBS) (Australia's government-funded national insurance scheme for medicines), pricing calculations and medication safety.

**Results:** The unit will run as a competency-based unit from 2023. Summative assessment activities are pharmaceutical and PBS calculations and medications safety quizzes that students must pass by the end of the term; practical exam where students complete documentation and compound an unknown product; and dispensing portfolio, for which students must be assessed as competent for 10/15 products made in their weekly dispensing labs. Learning activities, including formative assessment, are weekly lab sessions where students compound different types of pharmaceutical products and complete associated documentation; 2 x practice practical exams; online recorded lectures on the topics of pharmaceutical formulations, pharmaceutical calculations, PBS calculations and medication safety; weekly prework quizzes; and workshops where students can practice skills such as methods writing.

**Discussion:** It is expected that the change to a competency-based unit will improve student performance in pharmaceutical dispensing and compounding and provide a more holistic assessment of related competencies. More information on the impact of these changes will be available after the revamped unit is run for the first time in term 1 (February to June) 2023.

## Reflections on teaching pharmacy law

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**Background:** Australian pharmacy graduates are expected to demonstrate contemporary knowledge and application of legal requirements related to pharmacy practice. However, the ideal time to cover this content is unclear. The authors are moving this from the final term of the undergraduate degree to a third-year dispensing and counselling unit. The aim is to prevent delays in completing this (e.g. due to illness or misadventure), affecting students' ability to enter the workforce and allow it to be incorporated into final-year first-term pharmacy practice units of study. Here, the authors offer their reflections on this change.

**Methods:** Content was converted to an online module consisting of short recorded videos and online quizzes to best suit students' varied timetables. Constructive alignment underpinned this, with clearly articulated learning outcomes, assessments designed to match learning outcomes and a number of opportunities for formative assessment before their final exam. This was supplemented with an asynchronous online discussion board and drop-in sessions, providing opportunities to ask questions and develop their knowledge by interacting with peers.

**Results:** 464 students across three cohorts- Bachelor of Pharmacy students in their third and final years (final year students complete one of the honours, international exchange, industrial placement or standard streams) and graduate entry Masters of Pharmacy students- completed the module and associated exam in 2022. There was active participation on the online discussion boards and drop-in sessions. Students commented that the content was relevant and presented, and the quizzes were good preparation for their final exam. Exam results improved compared to previous years (failure rate 5% compared to 10% in 2021) with some differences between cohorts (highest average mark for honours students and lowest for third-year students). Logistical challenges, such as identifying students with non-standard enrolments that could miss the content, need to be addressed.

**Discussion:** Delivery of pharmacy law content is feasible at multiple points of an undergraduate degree, with neither time point dominating the other. Continued development of the module in response to student feedback will ensure that it remains useful and relevant for students and support them in mastering this essential content regardless of when it is delivered.

## Establishing a sustainable development pathway for advancing pharmacy practice in Northern Ireland

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**Background:** As patients' health needs become increasingly more complex, advanced pharmacist practitioners who can manage and prescribe medicines safely and effectively play an important role in their holistic treatment and care. Structured work-based learning and effective mentorship and support are key components of a pharmacist's development pathway towards advanced practice.

**Methods:** A two-stage development pathway for hospital pharmacists has been established in Northern Ireland. Stage 1 is a Foundation Programme (FP) for newly qualified pharmacists; stage 2 is an Advanced Practice (AP) programme. Pharmacists undertake work-based activities throughout both stages, supported by workshops, webinars and eLearning. One AP work-based activity is to mentor and support another learner. The aim of including this in the AP programme was to build sustainability into the pathway. Their familiarity with the development pathway means that most AP pharmacists choose to mentor an FP pharmacist (rather than a pre-registration trainee or pharmacy technician).

**Results:** Stages 1 and 2 of the development pathways (FP and AP) were implemented in 2008 and 2010, respectively. As of 31st May 2022, 445 of the 674 hospital pharmacists registered in Northern Ireland (66%) had embarked on the pathway. 334 (75% of those on the pathway) had completed stage 1 (FP); the remaining 111 (25%) were current FP students. 305 (91% of those who completed stage 1) had progressed onto stage 2 (AP). 229 (75% of AP pharmacists) chose to mentor FP pharmacists (rather than trainees undertaking other learning programmes), thereby building sustainability into the development pathway.

**Discussion:** A sustainable two-stage development pathway for advancing pharmacy practice has been established for hospital pharmacists in Northern Ireland. The pathway has recently been expanded to include general practice and community pharmacists. The inclusion of educational work-based activities in both stages aims to promote sustainability across the whole workforce development pathway.

## Proof of concept developing a single integrated model of learning and application and documentation

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**Keywords:** *Application, Certificate, Change to practice, CPD, Learning, Reflection*

**Background:** To meet General Pharmaceutical Council (GPhC) revalidation requirements, pharmacy professionals in the UK must demonstrate the impact of learning on improving patient care. There is a range of templates available, but no single model of CPD or document that incorporates all facets of learning and application to practice.

**Methods:** Utilising underpinning educational theory, an integrated model of learning and application was created to guide learners through the full CPD cycle in conjunction with supporting documentation that incorporates the whole process within a single template.

To test the proof of concept, the authors are running a series of interviews with a range of pharmacy professionals to conduct the anonymous online survey. Discussion topics include current working methods for reflective practice, existing documentation and associated challenges, learner experience of using the integrated model and documentation, and reflections for future use within their practice.

**Results:** Data is currently being collected to test proof of concept. The results will be used to inform the authors' future research in this area.

The use of the integrated learning model and associated documentation of evidence will be collated over 12 months through the Centre for Pharmacy Postgraduate Education (CPPE) website as a pilot for a learning programme.

**Discussion:** This single integrated model of learning and application and associated certificate guides lifelong learning by removing barriers and facilitates an easier journey to CPD. This aligns with FIP Development Goal #9, "*CPD Strategies*".

This research is the starting point for a planned larger staged piece of research.

## Design and implementation of a novel ward-based pharmacy clinical educator programme at a multisite tertiary teaching hospital

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**Keywords:** *Clinical pharmacy, Entrustable professional activity, EPA, Hospital pharmacy, Pharmacy clinical educators, Training, Ward pharmacists*

**Background:** Training programmes are well established for pharmacy interns and early to mid-career pharmacists through foundation and advanced residency frameworks within Australian hospitals. Structured training programmes for new-to-hospital pharmacists to provide clinical services have not been developed. The authors designed and implemented a novel educator programme to support these pharmacists.

**Methods:** Sixteen experienced hospital pharmacists were credentialed as pharmacy clinical educators (PCEs) through three 2-day workshops and assessments on education principles, Entrustable Professional Activities (EPAs) and effective feedback.

A PCE-led training programme was implemented across a 6-site, 2000-bed hospital, consisting of a 2-day workshop and pairing new-to-hospital pharmacists with PCEs on a ward. "*At the elbow*" training and assessment using EPAs were provided through standard or modified training programmes based on previous experience. Pharmacists needed to achieve level 3 in four EPAs to work with indirect supervision: Best possible medication history, admission medication reconciliation, discharge medication reconciliation and counselling.

**Results:** Nine months post implementation of the programme, 131 pharmacists have completed or commenced training with a PCE, and 776 EPA assessments have been completed. Overall, 65% (85/131) of pharmacists required the standard training programme with EPAs, and 35% (46/131) required modified training programmes due to past hospital experience. Of the 85 pharmacists who received standard training, 69% (n=59) achieved a level 3 in all 4 EPAs and can now work with indirect supervision. 28 of the 131 pharmacists are still in training.

Participant feedback included that the training was supportive of the development of clinical skills and confidence-building.

**Discussion:** The novel PCE-led training programme bridges practice gaps for new-to-hospital pharmacists through delivering a structured training programme, with a key strength being the one-on-one tailored training. This program has expedited the upskilling of pharmacists to undertake core EPAs, enhancing patient care, and may serve as a model for other settings.

## Using a simulated electronic medical record (EMR) to facilitate interprofessional communication and collaboration in a digital world

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**Keywords:** *Communication, Development Goal 20, Digital health, Interprofessional education, Simulation*

**Background:** Communication between the health professions in clinical practice has recently shifted from paper to electronic medical records (EMR). There is a need for universities to prepare health graduates for interprofessional digital communication. Interprofessional education (IPE) activities using simulated EMRs present a potential avenue to teach interprofessional digital communication.

**Methods:** An interprofessional team co-designed an online IPE activity (2021) for third-year pharmacy and fifth-year medical students utilising a simulated EMR (EHRGo). Students completed profession-specific tasks relating to a simulated patient admitted to the emergency department, then collaborated in interprofessional groups to establish a medication charting plan.

Immediately after the workshop, students were invited to complete a voluntary, anonymous online evaluation. Five-point Likert scales were used to rate the relevance to practice, achievement of learning outcomes, organisation and overall quality of the activity. Students were also asked to contribute qualitative feedback in a Keep/Start/Stop format.

**Results:** A total of 640 students participated in the IPE activity, of which 60% (386/640) were medical students. Of the participants, 28% (180/640) completed the survey, and 53% (96/180) of respondents were medical students. A majority of survey respondents agreed or strongly agreed that the activity was relevant to practice (94%; 170/180), achieved the learning outcomes (84%; 151/180), was well organised (74%; 133/180), and was of high quality (79%; 143/180). Positive feedback focused on the usefulness of interprofessional dialogue the IPE activity offered.

Constructive comments focused on the need for further clarity within some pre-task, profession-specific activities.

**Discussion:** Interprofessional communication commonly occurs via digital methods. A simulated EMR provides a useful platform for teaching and learning collaborative practice for undergraduate health professional students. The IPE activity may serve as a practical model for other faculties seeking to teach effective interprofessional collaboration and communication using a simulated EMR.

## Maintaining professional currency: Teaching pharmacy students and interns to identify legal change in the professional practice environment

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**Background:** The rapid pace of regulatory change catalysed by the COVID-19 pandemic reinforces the need for pharmacists to keep track of legal changes impacting their practice. Additionally, Australian pharmacy higher education providers need to be able to demonstrate that their graduates maintain familiarity with key legislative instruments as a requirement of degree accreditation. There is, therefore, a need to assist intern pharmacists in developing skills to identify relevant legal and regulatory changes.

**Methods:** A didactic lecture was developed to provide interns with the skills to identify relevant legal and regulatory changes. Learning outcomes were to 1) identify the major sources of professional and legal information needed to remain up to date and 2) explain the different purposes and contents of these resources. Sources demonstrated include the Pharmacy Board of Australia, Australian Health Practitioner Regulation Agency (Ahpra), Pharmacy Council of NSW, Therapeutic Goods Agency (TGA), NSW Poisons and Therapeutic Goods legislation and NSW Health website. Interns were encouraged to record these activities as part of their continuing professional development requirements.

**Results:** The lecture was first delivered in 2020 to 103 pharmacy interns by an experienced pharmacy academic specialising in legal aspects of pharmacy practice. It has since been delivered as a recording to final-year pharmacy students and interns in 2021 and 2022.

**Discussion:** Feedback on this lecture was positive, as demonstrated by 100% agreement with the statement, "*I developed the ability to practically apply knowledge of the field(s) I am studying*" (n=69) in a programme evaluation survey. Teaching pharmacy students and interns how to maintain professional currency is important to facilitate the legal and ethical practice of individual practitioners and for education providers to meet their accreditation requirements.

## What can I bring to the job? Perceived competencies and job readiness at the conclusion of a pre-registrant training programme

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**Background:** The Australian National Competency Standards Framework for Pharmacists 2016 (NCSF) describes the skills, attitudes and attributes that enable a pharmacist to practise effectively. Little is known about what pre-registrant pharmacists perceive to be valued by employers. This study investigates the competencies and evidence pre-registrant pharmacists mention in job interviews.

**Methods:** In 2021, pre-registrant pharmacists completing a year-long extension pre-registration training programme performed a virtual mock job interview for an entry-level pharmacy position (hospital residency pharmacist, community pharmacist in charge or professional services community pharmacist). Participants were asked what skills they could bring to the job. Responses were transcribed and coded using team-based framework analysis using an inductive codebook mapped to the competency domains of the NCSF: Domain 1: professionalism and ethics; Domain 2: communication and collaboration; Domain 3: medicines management and patient care; Domain 4: leadership and management; and Domain 5: education and research.

**Results:** A total of 143 interview transcripts were included in the analysis. The top competencies mentioned were "*leadership of self*" (98.6%) and "*communication and collaboration*" (96.5%). Participants less commonly mentioned evidence of external leadership, such as "*contributing to innovation*" (20%). Despite graduating from a course with an integrated research curriculum, participants rarely mentioned research-related competencies (31.5%), and no participant discussed expert or specific professional service-related skills. Responses about skills were often spoken about broadly without relating to evidence/experience and were often not targeted to the job description. There was often a disconnect between the

programme opportunities and pre-registrant interview responses.

**Discussion:** The results of this study provide insight into the competencies pre-registrant programme participants perceived were relevant for entry-level pharmacy positions. To support employability, future curricula should emphasise portfolio management with regular mentoring from practising pharmacists about how to use specific evidence of competency development in job interviews.

valued the opportunity to practise MHFA skills and learn from people with lived experience.

**Discussion:** Collaborating with mental health consumers has enabled the development and delivery of authentic psychosis care scenarios for pharmacy education. Bringing trained actors into the classroom has supported students' MHFA skill development and enhanced their confidence in providing MHFA for people presenting with symptoms of psychosis and their careers.

## Engaging mental health consumers and actors to co-design and deliver simulated patient role-plays of psychosis care for pharmacy students

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**Background:** Simulated patient role-plays allow students to practise Mental Health First Aid (MHFA) skills in safe learning environments. While consumers have delivered pharmacy education, limited research explores their involvement in curriculum design. This project aimed to co-design and co-deliver psychosis care role-plays with mental health consumers and explore MHFA-trained students' experiences.

**Methods:** Three simulated patient (SP) scenarios (first-episode psychosis, carer of someone living with schizophrenia, non-adherence to antipsychotics) were co-designed with mental health consumers, then content validated by mental health stakeholders. Content-valid scenarios were enacted by trained actors during in-class role-plays with MHFA-trained students. These role-plays were observed and assessed by consumer educators and pharmacy tutors using psychometrically tested rubrics. Immediately after each role-play, self-assessment, performance feedback, and debrief discussions followed between role-playing and observing students, tutors and consumer educators. Students were invited to participate in focus groups to share their experiences of MHFA training and the SP role-plays.

**Results:** Two consumers participated in co-design; four consumers and five healthcare professionals participated in content validation. Final year Master of Pharmacy (M.Pharm.) and Bachelor of Pharmacy (B.Pharm.) students completed MHFA training (n=209), of which 24 M.Pharm. and 62 BPharm students role-played with actors while peers observed. Seven focus groups attended by 36 students in total were conducted. Students found the scenarios insightful, realistic and relevant to future practice and reported that role-playing with actors increased their confidence in supporting people experiencing mental health problems and crises. Students

## Developing research capacity: Impacts of pre-registrant research training programme for community pharmacy learners

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**Background**: Research demonstrating the impacts of research training is largely derived from hospital pharmacy residency programmes. However, establishing a research capacity in the community pharmacy sector is of equal importance. The authors aim to describe the impact of a pre-registrant pharmacist research training project for learners in a community setting.

**Methods**: In 2021, pre-registrant pharmacists (interns) completed a yearlong internship in a community pharmacy and enrolled in an extension programme. A core component of the programme was the completion of a self-selected individual longitudinal workplace-related research project. Interns created a research proposal, collected data, and presented their research at a capstone conference event. Project submissions were classified into different methodologies by the research team. Interns were asked to rate their confidence in performing research and the importance of research across a four-point Likert scale via a voluntary anonymous survey. They were also asked to select barriers to completing their project.

**Results**: Eighty-two community pharmacy interns completed the programme. The most common project methodology was a cross-sectional survey (73%), followed by a retrospective audit (18%), prospective audit (5%), retrospective cohort study (3%), and pre/post-intervention study (1%). Of the community pharmacy interns who completed the programme, 61% (50/82) completed the survey. Of these, 74% felt somewhat confident undertaking research in the future. The most common barriers were a lack of

support/direction (48%), lack of time (42%), and lack of project ideas (36%).

**Discussion**: Participants completed a range of community workplace-based research projects and gained confidence in research. Perceived barriers to research, such as lack of support/direction, may be due to the confidence of community pharmacy supervisors. Programmes such as this provide one step to removing such barriers by increasing research skill capacity.

## Leadership training in a pharmacy intern training programme

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**Background:** Pharmacy accreditation bodies globally have highlighted the importance of leadership in the pharmacy profession. Further, intern pharmacists in Australia are expected to provide effective leadership by managing their own roles and influencing others in a professional team context.

**Methods**: A one-hour workshop was designed to evaluate effective leadership and for intern pharmacists to reflect on their own leadership experiences during their internship year. The workshop looked at the strengths and deficiencies of various leadership styles, and the intern pharmacists discussed leaders in their workplace and also explored when they provided leadership such as taking the initiative, accepting responsibility for organising, influencing and negotiating with others, e.g. health promotion projects. Intern pharmacists also engaged in self-management, i.e. self-assessment of competencies relating to leadership, and started planning their professional development in this domain.

**Results**: The workshop was piloted in 2020 as part of The University of Sydney NAPE Intern Training Programme seminar and has been further refined and delivered in 2021. In 2022, an experienced pharmacist educator trained nine facilitators to deliver the workshop to 98 interns in small groups of 10-11 intern pharmacists. The facilitators described

it to be an innovative and useful workshop that focussed on a topic that is commonly overlooked during internship training.

**Discussion**: During this workshop, intern pharmacists discussed how leadership skills can contribute to problem-solving and conflict management in the workplace. They also understood the importance of continuing professional development and gained skills in self-management, including reflection, self-assessment, and identification of professional development needs.

## Summer camp for high school and undergraduate students: Gaining momentum in the pharmacy profession

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**Background:** Enrollment in pharmacy programmes has declined since 2013. This continued decline has created challenges in recruiting interested and qualified applicants and the possibility of a pharmacist shortage. To create new interest in the profession, a pharmacy summer camp was created to engage prospective students in pharmacy careers.

**Methods**: The pharmacy summer camp was created to introduce high school juniors, seniors, and undergraduate students to the pharmacy profession. Marketing methods included digital campaigns and partnerships with local organisations devoted to preparing low-income students for post-secondary education. Interested applicants were required to submit a registration form, brief essay, and recommendation form for consideration. Once accepted, participants spent two days on campus, completing various interactive experiences related to pharmacy concepts, skills, and career fields.

**Results**: A total of 33 participants attended the two-day summer camp, representing five states. Day one experiences included a team-based learning demonstration, a compounding activity, vital sign assessment, prescription interpretation, careers in clinical pharmacy, and an introduction to the pharmaceutical industry. Day two incorporated careers in research, a sterile compounding activity, campus tours, tips for applying to pharmacy school, and closing remarks from the Dean. Each camp day concluded

with a fun event (ice cream truck, games, prizes). Participants created and offered their business cards to faculty and student pharmacists to foster further dialogue after the camp ended.

**Discussion**: The camp was successful at exposing prospective students to the pharmacy profession. There is capacity for more participants in future camps. Considerations to increase the number of participants include earlier and more expansive marketing campaigns, offering on-campus housing, streamlining the application process, and strengthening partnerships between the school and local feeder organisations.

## A comparison of the impact of online *vs.* face-to-face on-campus teaching for empathy skill development in pharmacy students

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**Keywords:** *Empathy teaching, In person, Online pharmacy, Simulation*

**Background:** Empathy is a core health professional skill with widely-known benefits in healthcare, including reducing patient anxiety and stress and improving care experience and clinical outcomes. Empathy is a required graduate skill outcome endorsed by the Australian Pharmacy Council (APC), the national accreditation authority for pharmacy education and training.

**Methods:** This study examines the impact of simulated role-play activities to develop empathy skills in two cohorts of students who participated in in-person workshops facilitated on campus *vs.* online workshops delivered via Zoom. Dermatology and pain case scenarios for addressing patients' emotional needs and understanding their perspectives were used in these empathy teaching workshops that involved medication history taking and patient counselling. Pre- and post-workshops, students' empathy scores were measured using a validated survey tool called the Kiersma-Chen Empathy. Empathy scores of students in in-person *vs.* online workshops were compared.

**Results**: 96 students (29% males, 71% females) participated in in-person workshops compared with 106 students (23% male, 77% females) for online workshops. Significant increases in empathy scores were measured for all student groups that participated in in-person workshops. In this group, significantly higher empathy scores were also seen in

domestic students compared with international students (t-test, $p < 0.05$). However, no differences in empathy scores were seen between male and female groups. In comparison, there were no significant differences between pre- and post-workshop empathy scores of all student groups (males, females, domestic, and international) who participated in the online workshops delivered virtually via Zoom.

**Discussion:** Role-playing simulation can be used to develop empathy skills in pharmacy students. No differences between pre- *vs*. post-workshop empathy scores of online groups indicated that in-person instruction and interactions are necessary for enhancing complex skills such as empathy. Cultural factors may influence the development of empathy skills and empathy teaching.

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## Development and implementation of a unique Advanced Training Residency (ATR) in pharmacy education

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**Background:** In 2019, Advanced Training Residency (ATR) programmes supporting mid-career pharmacist specialisation were launched by the Society of Hospital Pharmacists of Australia. ATRs had been completed for clinical specialities (e.g. cardiology), but Alfred Health recognised the importance of specialist education pharmacists to support workforce development and, therefore, created an education ATR.

**Methods:** The two-year Education ATR was developed in partnership between a major metropolitan hospital and a university. Fifty per cent of the resident's time focused on tertiary learning at the university (e.g., unit coordination) and fifty per cent on work-integrated learning (WIL) at the hospital (e.g. clinical supervision).

Core learning outcomes were collated from international research on pharmacy residency teaching/learning certificates and medical education programmes. Application

activities for each outcome were mapped to the ATR framework requirements. Internal and external mentors supported the resident's development in core education themes, with an emphasis on clinical education leadership and research skills.

**Results:** The Education ATR included seven themes: education theory, education design, education delivery, assessment, supervision, research, and leadership. Each theme consisted of learning outcomes, mentor discussion topics and application-based activities.

For example, in the education design theme, the resident applied education theory, such as constructive alignment and active learning, to design tertiary-level study units and WIL programmes. The resident has created pharmacy workforce training programmes (n=12) and coordinated 12-week tertiary study units (n=2). Other outputs include junior learner mentorship (n=5), pharmacy student placement coordination (n=70), and co-design, delivery and evaluation of an interprofessional workshop (n=640 medicine/pharmacy students).

**Discussion:** This evidence-based education ATR allows pharmacists to specialise in education to support the delivery of education programmes that facilitate expertise development within a pharmacy department. This experience serves as a model for institutions seeking to establish 'education' as a speciality practice area to support the advancement of the overall pharmacy profession.

## Exploration of employability in pharmacy. supporting transition from undergraduate to registration

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**Background**: Embedding employability within undergraduate curricula is a key priority, ensuring graduates are workforce-ready.

This study aimed to determine the "*employability characteristics*" required for newly qualified pharmacists (NQPs) to deliver safe and effective pharmaceutical care upon registration. Additionally, these characteristics would lead to recommendations for course design.

**Methods**: An exploratory study design was employed to gather qualitative data using semi-structured interviews.

Following ethical approval, participants were recruited via personal and professional networks and pharmacy organisations. Participants included NQPs, employers of NQPs, and pharmacy organisations and stakeholders.

Participants worked across community, hospital, mental health and industrial pharmacy.

The interviews explored participants' views on NQPs' employability. They also explored how education recruitment and selection processes might change, which are not reported here.

Interviews with stakeholders (9), employers (13), and NQPs (17) were conducted face-to-face, audio recorded, transcribed verbatim and analysed using thematic analysis to determine the employability characteristics.

**Results**: Participants described "*characteristics*" with rationale. Characteristics represented "*knowledge*", "*skills*" and/or "*attributes*".

Stakeholders and employers viewed knowledge requirements as fluid, with specific knowledge not as important as being able to learn, critique information and apply knowledge. Conversely, NQPs believed knowledge was a key priority.

Participants recognised the value of professional, technical, subject-specific and/or transferable skills. Skills were viewed as interrelated and not mutually exclusive. Most participants viewed skills as impacting and being influenced by attributes and knowledge.

For employers and stakeholders, attributes underpinned successful professional journeys, with NQPs needing to demonstrate person-centred values. NQPs viewed attributes of a lesser importance.

**Discussion**: Whilst knowledge, skills, and attributes can be discussed separately, and comments can and are made about their relative importance, they cannot be considered in isolation. Articulation and embedding of employability must recognise and include knowledge and skill development, underpinned by attributes, to support practitioners in learning and developing.

## Evaluating progress during workplace-based postgraduate education

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**Background:** In postgraduate workplace-based education, the combination of measuring performance and giving feedback during progress evaluations creates tension between its' formative and summative purposes. It is challenging for supervisors to perform these evaluations. In this study, the authors investigated how progress evaluations are used by supervisors in a community pharmacy residency programme.

**Methods:** The utility of three-monthly progress evaluations in a two-year community pharmacy specialisation programme in the Netherlands was studied with a mixed-method approach. An adapted version of the Canadian Medical Education Directives for Specialists (CanMEDS) framework was used by supervisors to measure trainee performance. The validity of the performance evaluation scores of 342 trainees for each CanMEDS role and six-time points were analysed using repeated measures ANOVA. Semi-structured interviews were held with fifteen supervisors to investigate their response processes, the utility of the progress evaluations, and the influence of supervisor-trainee relationships.

**Results:** The mean progress evaluation scores for each role increased over time, and the Manager role scored relatively low compared to the other roles. Interviews revealed that supervisors varied in their response processes. They were more committed to stimulating trainees' development than scoring actual performance. Therefore, the scores were unreliable. Progress evaluations were utilised by supervisors to discuss and give feedback on trainee development and to add structure to the learning process. A positive supervisor-trainee relationship was seen as the foundation for feedback. Supervisors preferred their roles as educators, mentors, and coaches over their roles as assessors.

**Discussion:** The authors found that progress evaluations are a useful approach for supervisors to direct feedback and structure learning in postgraduate competency-based education. However, the reliability of measuring performance during these progress evaluations was low. The authors recommend progress evaluations be independent of formal assessments in order to minimise conflicts among supervisors.

## Never waste a crisis – Collaboration is the new normal

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**Background:** The COVID-19 pandemic has required organisations and individuals to be more flexible and reactive. As an accreditation authority, the authors' processes were heavily impacted by the challenges of the pandemic, but it was important to maintain the pipeline of pharmacists while still maintaining standards. This has been the authors' journey.

**Methods:** The Australian Pharmacy Council is the independent accreditation authority for pharmacy education and training. The authors do this work with the Pharmacy Board of Australia, the registering authority for pharmacists. In 2020, as the authors were faced with the challenges of COVID-19, they worked closely in new ways with education providers, preceptors, and the Pharmacy Board to ensure that pharmacy students in Australia were able to continue their journey to registration. This was even more important due to border closures that disrupted overseas trained pharmacists migrating to Australia and the increased demands for a pharmacist workforce.

**Results:** The authors' more flexible approach required increased collaboration with the education providers, students and professional organisations. The authors discovered how beneficial this was with positive results from stakeholder surveys. The authors pivoted the registration examinations to online delivery without negatively impacting the 2020 cohort of pre-registration pharmacists. The authors used new technologies to continue the programme accreditation schedule and proactively consulted with stakeholders to ensure no additional burden. The authors made changes to the accreditation standards for vaccination programmes to support and increase the role of pharmacists as vaccinators, including allowing students to be trained and employed in vaccination hubs.

**Discussion:** The authors' collaborative and flexible approaches since 2020 have ensured that first-time pharmacists have been able to register in Australia without interruption during the pandemic. Many of these changes are enduring and have allowed us to maintain standards, expand the pharmacist scope of practice and give confidence to the public in the value of pharmacists.

## Experiences of lifelong learning for English pharmacists during the COVID-19 pandemic

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**Background:** Before the COVID-19 pandemic in March 2020, learning for pharmacists was a mixture of face-to-face and online. During the pandemic, this mostly shifted online, with participation affected by changes in lifestyle and workload. This work aimed to investigate how pharmacists completed their ongoing learning throughout the pandemic.

**Methods:** An online questionnaire-based survey was designed consisting of 20 questions looking at learning completed in terms of format and provider, as well as exploring barriers, motivators, and preferences for participation in learning events in the future. Questions were tick box and open-ended. Ethical approval was obtained from a higher education institution. A paper survey was distributed by hand to pharmacists across London, England, between February and March 2022, with responses added to the online link. Data was transposed into Microsoft Excel for data evaluation.

**Results:** From 202 responses, 91% (180/198) had participated in learning activities since March 2020; 114 (63%) had attended an online workshop; 112 (62%) completed an e-learning package, with 25 (14%) attending the face-to-face activity. The Centre for Pharmacy Postgraduate Education (CPPE) provided training for 114/184 (62%), with 68/184 (37%) having employer-led learning. The biggest motivator for participation was keeping current, with the biggest barrier being finishing work too late (76/198; 38%). When asked how learning had changed during the pandemic, moving online and being more independent were the biggest themes. If no restrictions were applied, 44% (89/201) said they preferred face-to-face events.

**Discussion:** During the COVID-19 pandemic, pharmacists actively participated in learning events, with the majority of these happening online. More independence in learning was seen from this shift. However, although online learning has now become more utilised, providers should note that there are still many pharmacists who would like access to face-to-face provision.

## Development and evaluation of a virtual privilege walk for pharmacy students

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**Background:** Understanding the concept of privilege, recognising the existence of privilege in society, and encouraging reflection on one's privilege may improve empathy, which is an important skill for healthcare professionals to develop (McIntosh 2012). Privilege walks are one way to encourage self-reflection about privilege, but such activities may distress participants because of their identifiable nature. With this in mind, an online anonymous privilege walk was developed to encourage self-reflection of privilege in pharmacy students in a safe manner.

**Aims:** To evaluate a virtual privilege walk to encourage students to reflect on their privilege and as a concept in healthcare.

**Methods:** Statements from other privilege walks were analysed for clarity and transferability, and a list of 30 statements was developed and built into an online virtual privilege walk to allow students to confidentially see their walk results compared to the whole cohort. The virtual privilege walks and a reflective activity on privilege were undertaken by 186 first-year pharmacy students. Before and after this activity, 78 students completed a 16-item diversity and oppression survey. This survey was designed to measure four factors: 1. Confidence in knowledge and understanding of diversity, 2. Awareness of diversity and oppression, 3. Opinions on pharmacy counselling and congruence between pharmacist and patient, and 4. Opinions on pharmacists' roles in promotion and support of diversity. Two-way ANOVAs were used to determine any changes in the four factors pre- and post-activity.

**Results:** There was a significant increase in factor 1 ($F_{2,147}$ = 27, $p < 0.0001$), no change in factor 2 ($F_{2\,5884}$ = 2, $p = 0.12$) and 4 ($F_{2,224}$ = 2, $p = 0.11$), but a decrease in factor 3 ($F_{2,211}$ = 8, $p < 0.001$) post activity compared with pre-activity.

**Discussion:** Confidence in knowledge and understanding of, awareness of, and opinions on pharmacists' role in support of diversity all improved after students undertook and reflected on the privilege walk. Unexpectedly, more students thought pharmacy counselling is more effective if pharmacists and clients have the same gender, sexual identity or racial group post activity.

## Identification of social determinants of education among pharmacy students

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**Background:** Social determinants of learning have been described as the contextual conditions and variables that impact students' ability to participate optimally in their education. There is a limited understanding of social determinants within graduate healthcare training, including individuals in pharmacy training programmes.

**Methods:** An original 28-item survey was developed and disseminated to 1st through 4th Year pharmacy students enrolled in the University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences entry-level Pharm.D. programme. The primary objective was to identify social determinants of education (SDOE) among these pharmacy students. In addition to the collection of students' demographics and educational performance, the survey evaluated SDOE in six different domains: physical health, psychosocial health, economic stability, self-motivation, social environment/community, and physical environment. This observational study used descriptive statistics to summarise primary objective findings and the Wilcoxon Sum Rank Test for secondary objective analysis.

**Results:** A total of 133 students (31%) responded to the survey. A majority of respondents were white (64%) and female (75%), with a mean age of 27 years. Approximately two-thirds (68%) reported needing to work during the school year to afford necessities. Respondents also reported being sometimes, fairly often, or very often concerned with being able to cover expenses each month (59.5%) and needing to see a doctor but not because of costs (40.5%). Respondents also reported eating less due to financial restraints (20%), worrying about housing (22.9%), feeling unsafe in their neighbourhood (29%), and feeling lonely or isolated (63.4%).

**Discussion:** Identification of SDOE among pharmacy students is the first step toward reducing disparities that exist within pharmacy education. Knowledge gained from this study can be used to create an actionable plan to address disparities, promote equitable opportunities for students, and ensure continued diversification of the pharmacy profession.

## Serendipitous and meaningful cross-programme and interprofessional collaborations for instruction in climate and health

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**Background:** Healthcare training programmes worldwide are challenged to include climate health in their curricula. Traditionally, programmes address new curricular elements in isolation – with each programme setting goals, creating instructional materials, assessing learning, and evaluating effectiveness on its own. Social, cultural, and funding factors can serve as barriers to powerful collaboration.

**Methods:** The authors collaborated across five programmes and three professions to create Human Health and Climate Change elective courses. The courses recruited pharmacy students (University of Colorado, University of Montana, Monash University), medical students (University of Colorado), and nursing students (Montana State University) connecting for different elements of the instruction. The courses were formatted using three overlapping elements – 1. intensive (medicine), 2. seminar (pharmacy), and 3. collaborative online international learning/COIL (pharmacy and nursing). Course objectives encompassed technical aspects of climate and health, interprofessional roles and responsibilities, and social accountability, including values and skills for promoting planetary health.

**Results:** A pilot pharmacy-only version of this collaboration was launched in February 2022. Overall, student feedback and instructor experiences were positive. The more complex, multiple-profession format will be launched in January 2023. By the time of the conference, the authors will use the Kirkpatrick Model of programme evaluation to describe the course's inputs and early outputs (satisfaction and learning). The authors will also share experiences of social accountability in contributing to the Planetary Health Report Card Initiative and the Global Consortium on Climate and Health Education learning materials repository. The authors will also address systems barriers and ameliorating factors for collaboration.

**Discussion:** University systems have been traditionally designed for instruction to students from a single programme. Health professions programmes have been encouraged to adopt interprofessional instruction for the betterment of health care. Collaborating across institutions in developing, teaching, and evaluating essential new curricular elements can be challenging yet powerful. Collaboration can also foster academic belonging.

## "We're seen as part of the supply chain of medicines rather than as the professionals that we are": A qualitative study of psychological wellbeing of pharmacists during the COVID response in the Republic of Ireland

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**Background**: Research has begun to draw attention to the challenges to community pharmacists in delivering services during the COVID-19 response. However, few qualitative studies have examined the impact of these experiences on their well-being. The aim of this study was to examine the work-related experiences and psychosocial needs of community pharmacists situated in the Republic of Ireland arising from the COVID-19 response.

**Methods**: 12 participants were interviewed, and data were analysed through inductive thematic analysis.

**Results**: The work experiences of participants were characterised by increased workload and psychological strain from a pharmacy, one of the few services in the community that remained open and accessible during the pandemic. This included meeting the needs of patients who couldn't access other primary care services and providing an outlet for social connectedness for the general public. Despite this, participants felt that contributions to the community during the COVID-19 pandemic had largely gone unrecognised by the wider healthcare structure, adding to a sense of disenchantment that had already taken root within the profession prior to the emergence of the pandemic due to long-standing under-resourcing, lack of clinical autonomy and their role being stripped of meaning due to high administrative burden.

**Discussions**: The post-pandemic environment is an opportune time for policymakers to reconsider the workforce well-being of pharmacists. Retention and recruitment problems within pharmacies threaten the continuity of delivery of professional services, patient care and career satisfaction of pharmacists. Lessons from this study should inform organisational change to protect the well-being of patients and ensure pharmacy careers remain attractive and professionally rewarding for retention within the sector, as well as maximise benefit to patient care.

## Interprofessional learning – Intern pharmacists supervised by medical professionals in the ward setting

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**Background:** Interprofessional collaboration is essential in improving healthcare outcomes; however, integrated interprofessional practice learning opportunities are limited in undergraduate teaching programmes. To provide structured practice-based learning opportunities for the authors' intern pharmacists, the authors introduced a novel rotation where interns were paired with a consultant physician as a supervisor for a 4-week rotation.

**Methods:** This project aims to explore the impact of a four-week interprofessional rotation, including ward rounds for intern pharmacists under the supervision of a consultant physician. Intern pharmacists across four hospitals participated in a four-week interprofessional rotation. All intern pharmacists and Consultant Physicians who participated in this programme over a two-year period were invited to participate in a semi-structured interview, which was audio-recorded, de-identified and transcribed. Qualitative data was independently analysed by two researchers using an inductive thematic approach using NVivo software. The agreement was reached between analysts through reflexive meetings and discussions with the implementation team.

**Results:** Three main themes emerged, including;
Understanding the patient' participants reported they were more aware of patient needs and felt the experience helped them to better understand and respond to these.

Development goes both ways, with both the intern and the consultant identifying areas in the experience that improved their practice.

Finding that *"sweet spot''* where the intern established their role within the interprofessional team, and the team developed a more collaborative approach to patient care

**Discussion:** Both interns and consultant physicians consider that integration of pharmacy interns into and collaboration with the health care team improves efficiency, communication, and job satisfaction. The interprofessional supervisory aspect of this rotation is unique, and participants report that it contributes to improved patient outcomes and preparing a collaborative-practice ready workforce.

## Creating new Entrustable Professional Activities (EPAs): Development and evaluation of an interprofessional ward round EPA

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**Background:** EPAs describe a unit of professional practice that an individual may be entrusted to perform with decreasing levels of supervision. This study seeks to develop, pilot and evaluate an EPA tool to support the development of intern pharmacists participating in an interprofessional ward round under medical practitioner supervision.

**Methods:** A multi-professional focus group identified pharmacist activities on an interprofessional ward round and developed these into an EPA tool mapped against the Australian Pharmacist National Competency Standards through content analysis. The tool was assessed for face validity by the focus group and piloted by intern pharmacists and medical consultants over two years. Participants were interviewed to assess the usability and value of the EPA tool. Interviews were recorded, transcribed and analysed using an inductive coding approach in NVivo.

**Results:** Two clinical pharmacists, one nurse and three physicians contributed to the focus group discussion. Thirty-nine tasks were identified and mapped against the five pharmacist competency domains of the Australian Pharmacist National Competency Standards to form the EPA. All medical consultants and interns working across three metropolitan teaching hospitals who participated in the ward

rounds were invited to participate in the semi-structured interview. Participants valued the experience and felt the tool guided intern pharmacist development and the entrustment decision. Interns found the list of activities that make up the interprofessional ward round assisted them in understanding expectations.

**Discussion:** This study demonstrates an evidence-based approach to EPA development, resulting in a useful training tool that can be used to provide a structured interprofessional learning opportunity.

## What is the right dose of IPE to be ready for practice?

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**Background:** Limited data exist about the longitudinal impact of interprofessional education (IPE) over a student's entire professional curriculum. Consequently, the demonstration of the appropriate amount, type, and sequencing of IPE activities for students to become team-ready is unclear. Various learning theories have been employed, but few are guided by a theoretical framework.

**Methods:** This retrospective, longitudinal observational study used quantitative serial measurements from a survey of a cohort of students over the length of their professional programme. A 12-item instrument was adapted from the Interprofessional Socialisation and Values Scale (ISVS), which aligned with the authors' theory-based curricular framework. After pilot testing, the instrument was completed by all students in the class of 2020 (n=118) annually. To mitigate response-shift bias, the instrument was administered using a retrospective pre-post approach. Pre- and post-score responses for each item were compared using paired *t*-tests and responses divided by academic year. Principal component analysis was conducted to test construct validity.

**Results:** Principal component analysis found all items loaded on a single unidimensional factor. Internal consistency was excellent ($\alpha > 0.9$). Analysis (n=425) across years showed significant ($p < 0.001$) differences between pre- and post-scores for all items. All mean post-scores were greater than the mean score, signalling a positive shift in confidence, comfort, and role understanding. A *t*-test comparison of scaled scores showed a significant increase between pre- and post-responses. Analysis by year showed a change between pre-and post-scores greater in the third year than the second year and the fourth year than the third. The increase from pre- to post-score was significant ($p < 0.001$) for each year.

**Discussion:** Results indicate the modified ISVS is a valid, reliable assessment for student values and socialisation in IPE. Data also indicate that a longitudinal IPE curriculum over time is impactful. Intentional scaffolding of activities grounded in theory amplifies learning. Future research is needed to assess and apply across other professions.

## Levels of transformation: A sociocultural exploration of practice change in community pharmacy

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**Background:** In England, the community pharmacy profession is changing. With mounting pressures on the healthcare system, community pharmacists are perceived as an untapped resource to relieve these stressors. While existing research into practice change exists, a critical voice, the voice of community pharmacists themselves, is seldom centred.

**Methods:** This study utilised a phenomenological methodology to explore the lived experiences of practice change for community pharmacists. In-depth, semi-structured interviews with ten community pharmacists at two time points centralised and gave voice to the lived experience of the participants. Reflecting the complex sociocultural contexts in which community pharmacists work, Rogoff's Planes of Analysis framework explored change through three separate but interlinked "*planes*":
Micro level: the personal experience
Meso level: the socio-cultural context of practice
Macro level: the wider profession and policy.

The experience of the individual was foregrounded and situated within the context of the organisation and the wider profession.

**Results:** The findings of this study illustrate the challenge of practice change for community pharmacists, whose role as change "*translators*" takes place in complex systems driven by external policy, organisational demands, and personal agendas, which are frequently at odds. Findings were presented under four themes that illustrated key experiences of change: agency in the change process, role tensions, networks of support, and psychological safety. Exploring the experiences of community pharmacists themselves proved critical to fully understanding the challenges of change in the context of practice.

**Discussion:** This study proposes that aligning community pharmacists' psychological and sociocultural needs with external drivers of change is critical to meeting the external demands for practice change while recommending how to nurture a professionally fulfilled workforce.

## Better together: Improving efficiencies and learning opportunities in a multi-pathway programme

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**Background:** The University of Colorado Skaggs School of Pharmacy and Pharmaceutical Science's Pharm.D. programme has multiple pathways (on-campus, online) and learners (entry-level, mid-career) working toward similar goals. Previously, these learners were taught separately. Resource constraints (e.g. fewer instructors available) and technology advances (e.g. video conferencing) motivated us to explore "*harmonising*" instruction in key areas, beginning with an evidence-based medicine (EBM) course.

**Methods:** The authors harmonised EBM instruction by 1) synchronising schedules, 2) combining instances in the learning managing system, 3) allowing all learners to attend class synchronously via Zoom, and 4) allowing all learners to access the course recordings. Group learning activities and assessments were similar but distinct. To collect feedback, the authors administered a survey to mid-career online learners and held a focus group with entry-level learners. The authors also compared course grades to previous offerings.

**Results:** Twenty-one mid-career online and 83 entry-level learners completed the EBM course. Ten mid-career online learners completed the end-of-course survey. Nearly one-quarter (22%) never attended class in real-time, 44% attended up to half the classes in real-time, and 33% attended more than half the classes in real-time. Half of the respondents indicated they performed better academically in the harmonised course, and 80% indicated they would prefer to have all their courses harmonised. The eight entry-level learners in the focus group all agreed the inclusion of the mid-career learners in the course was not a distraction. Exam scores for mid-career online learners and entry-level learners were similar to prior years.

**Discussion:** Learner and instructor results (e.g. satisfaction, learning, efficiency) from the harmonised course were mostly positive. Lessons learned in technology, accessibility, and design are informing the harmonisation of subsequent courses. Data collection is ongoing. Aggregated results from the harmonisation process in four courses will be shared at the conference.

## Pharmacist Prescribing for Minor Ailments (PPMA) in Ontario: Needs assessment of pharmacy students

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**Background**: In Canada, Ontario pharmacists were granted prescribing authority for 13 minor ailments in January 2023. No literature has explored the attitudes and preparedness of pharmacy students towards PPMA. The objective of this study is to identify pharmacy students' perceived confidence, readiness, and needs, including potential barriers and facilitators towards PPMA.

**Methods**: This is a needs assessment project where the authors surveyed 465 senior University of Toronto Pharm.D. students using a 30-item online questionnaire distributed via the student listserv and Facebook page from October 11 to 25, 2022. Quantitative data collected were analysed using descriptive statistics. Thematic analysis of free-text input was performed.

**Results**: Students (14.4% response rate) were most confident in managing gastroesophageal reflux disease and uncomplicated urinary tract infection and least confident in impetigo and tick bites. Students' confidence was associated with their perceived preparedness acquired from school, frequency of ailment encounters, and complexity of the condition. Barriers to PPMA included lack of time, legal liabilities and risks, and minimal financial compensation. Students were concerned about potential mistrust from other prescribers and inadequate knowledge. Additional resources (e.g. access to health records and enhanced pharmacy software) could guide decision-making, and an increased number of pharmacy staff would be beneficial to support PPMA.

**Discussion**: Students' confidence in managing the 13 minor ailments depends on their learning and practice experience, familiarity with and complexity of the medical conditions. Various barriers and facilitators towards PPMA were identified. Additional research is needed to guide pharmacy schools in developing resources that would best prepare students for PPMA.

## Gamification in health profession education: What we learned from the literature and our needs assessment

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**Background**: Gamification, also known as serious games, is shown to facilitate user engagement and knowledge retention in education. With it being relatively unexplored in pharmacy education, the authors present their pilot project of development, implementation, and evaluation of serious games in a patient safety course in their undergraduate pharmacy programme.

**Methods**: A literature review of user experience (UX) elements was conducted on databases MEDLINE, JSTOR, Web of Science, and IEEE Xplore. A needs assessment survey was disseminated to previous students in the course for topics and safety competency domains most needing knowledge reinforcement. Subsequently, a series of educational games were developed and implemented in the Winter 2023 offering of the course, accompanied by a pre-and post-intervention evaluation of students' knowledge and experience with the games.

**Results**: The authors' literature review identified six UX elements: ease of use, clarity and affordance, realism and authenticity, feedback mechanism, competition and points system, and complexity and challenge. The authors' needs assessment showed root cause analysis, failure mode and effects analysis, multi-incident analysis, and competency domains on safety, risk, and quality improvement needed the most knowledge reinforcement. The authors developed the Safety Games, which consist of two mini-games on the above topics. Knowledge assessment scores increased by 23.4% ($p$ = 0.0027, 95% CI [20.6, 26.3]) post-intervention. Students reported the games allowed them to better recall and reflect on acquired knowledge, identify existing gaps, and reinforce skills.

**Conclusion**: The authors identified several UX elements for designing engaging games and patient safety topics that may benefit from knowledge reinforcement. The authors' Safety Games attained enjoyability and knowledge reinforcement in learners. The authors' project was a successful proof of concept in using gamification in pharmacy education.

## An environmental scan of patient safety reporting and learning systems in community healthcare for multi-disciplinary teams

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**Background**: Patient safety reporting and learning systems (RLSs) are employed globally as a tool for continuous quality improvement in healthcare. Collaborating with the Manitoba Alliance of Regulatory Health Colleges (MARHC) in Canada, the authors aimed to identify multi-disciplinary, community-based RLSs and inform the implementation of a similar patient safety initiative in Manitoba.

**Methods**: The authors conducted an environmental scan in formal and grey literature. The formal literature search was performed on OVID MEDLINE and EMBASE databases, with titles and abstracts of journal articles screened. The grey literature search involved identifying websites and publications from regulatory authorities and policy institutes with a mission of patient safety and personal communication with subject matter experts. Inclusion criteria included the RLSs being community practice-oriented and reporting done by two or more health professionals.

**Results**: The authors retrieved 629 articles from the formal literature search. RLSs meeting the authors' inclusion criteria were identified in the United Kingdom, British Columbia (Canada), Spain, and the United States. Under-reporting of safety incidents was observed, with barriers to reporting associated with subjectivity in defining errors, lack of time, feedback, organisational support, and the fear of blame and punishment. The authors also identified facilitators of reporting, such as an enhanced feedback mechanism, education- and training-centric nature of reporting, and ensuring confidentiality and anonymity. Many of these factors indicated the importance of an established safety culture for adequate user engagement of RLSs.

**Discussion**: The MARHC will benefit from lessons learned from the various RLSs identified. Healthcare providers' knowledge, training, and appreciation of patient safety initiatives and an established safety culture among practitioners are crucial prerequisites for successful user adoption, engagement, and operation of a multi-disciplinary, community-based patient safety RLS.

## Developing a patient safety culture training curriculum for healthcare professionals

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**Background**: There is a paucity of patient safety culture training materials for regulatory health profession authorities to apply in healthcare settings. The authors' project aims to develop a translatable patient safety culture curriculum to support a multi-disciplinary regulatory authority in Manitoba, Canada, advocating patient safety culture and province-wide safety initiatives.

**Methods**: The authors adopted the first three steps of Kern's six-step approach to curriculum development by defining the goals and objectives of a patient safety culture curriculum for healthcare professionals. A structured search in MEDLINE, EMBASE, and a grey literature search was performed to find relevant guiding documents from patient safety organisations, including those in the United Kingdom (UK), Canada, the United States (U.S.), Australia, and New Zealand. The authors identified websites of regulatory authorities and policy institutes with a mission on patient safety and then located relevant documents via a targeted Google search. Materials were synthesised by extracting overlapping competencies relevant to patient safety culture.

**Results**: The authors identified patient safety guiding documents from the UK (National Health Service), Canada (Canadian Patient Safety Institute or Healthcare Excellence Canada), the U.S. (Institute for Healthcare Improvement), and the World Health Organisation. A curriculum with five core competencies and 22 learning objectives, ranging from organisational culture, just culture, safety improvement and evaluation, information sharing and transparency, and safety leadership, was developed. The authors adopted Bloom's taxonomy and segregated the learning outcome domains into knowledge, skills, and attitude in the resulting Safety Culture Curriculum for Healthcare Professionals.

**Discussion**: The authors' curriculum can serve as a primer for subsequent application, training evaluation, and continuous quality improvement for operationalisation at a site or across a jurisdiction through interprofessional collaboration. Patient safety culture education is an area that calls for further concerted efforts and innovations from all health professions and global jurisdictions.

## Podcast on quality improvement and leadership for early career healthcare professionals

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**Background**: The podcast is a resource to complement traditional didactic-based continuous professional development (CPD) on quality improvement (QI) and leadership. The objective of the "*Leading with Quality*" Podcast was to create a virtual resource for early-career healthcare practitioners to learn about QI, medication safety, leadership, business management, etc.

**Methods**: The authors developed six episodes where seven guest speakers, from faculty members to clinical directors, shared their QI and leadership experiences in higher education, hospital administration, the pharmaceutical industry, provincial regulatory authority, and experiential learning. An interview format with real-life examples and lived experiences from the presenters, along with an average duration of 30 minutes per episode, was maintained to optimise audience engagement. Based on Kirkpatrick's four-level training evaluation, the authors designed an online survey to seek listeners' feedback on the perceived value and relevance of content and knowledge gained in QI and leadership after listening to the pilot series on SoundCloud.

**Results**: A total of 20 responses were collected within a month of dissemination of the online user experience questionnaire. Respondents perceived the podcast episodes to be valuable and relevant and that they improved their knowledge about leadership and QI. They would listen to more episodes and recommend existing episodes to other healthcare professionals and learners. A few respondents mentioned that concepts and jargon should be explained at the beginning of the episode to improve clarity. Some episodes might benefit from dividing into two sessions to allow for more elaboration on the subject matter.

**Discussion**: The "*Leading with Quality*" Podcast is an accessible educational resource for healthcare professionals who wish to learn more about QI and leadership. It will serve as a self-directed and easy-to-access CPD resource to support early career healthcare professionals in learning about QI and lived experiences from healthcare leaders.

## The SMART pharmacist podcast: Medication safety learning anywhere, anytime

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**Background**: The engagement of pharmacy regulatory authorities across Canada in medication incident reporting and learning demonstrated a national interest in preventing errors and patient harm. The objective of the SMART Pharmacist Podcast was to create a virtual resource for healthcare practitioners to learn about contemporary topics in medication safety.

**Methods**: The authors developed six educational podcast episodes on patient/medication safety-related topics, from the aftermath of an incident and medication incidents associated with students to compounding errors and drug-drug interactions in older adults. A professional tone and a 15-minute episode were maintained to optimise audience engagement. All episodes contained specific learning objectives and take-away learning points. The podcast content was supported with examples of medication incidents anonymously reported to Canada's national medication safety organisation. The authors released the episodes on SoundCloud and iTunes and administered a 12-item online questionnaire to obtain feedback from listeners.

**Results:** A total of 13 responses were collected within a month of dissemination of the online questionnaire. Respondents practised in Ontario, Nova Scotia, Saskatchewan, and New Brunswick in Canada. Accessibility, information accuracy/validity, relevance of information to pharmacy or clinical practice, and scope/coverage of information of podcast were very positive. Respondents perceived the podcast episodes to contain information that has an impact on pharmacy and healthcare practices and that the medication safety recommendations presented were feasible and effective.

**Discussion:** The SMART Pharmacist Podcast is an accessible educational resource that can be utilised by any healthcare professionals who wish to learn more about effective and feasible (i.e. SMART: Specific, Measurable, Attainable, Relevant and Time-based) medication safety prevention strategies.

## Online pocket guide to quality improvement: A preliminary step to build a quality improvement community of practice for healthcare professionals

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**Background**: A virtual community of practice facilitates knowledge exchange/translation of quality improvement (QI) initiatives among healthcare professionals.

**Methods**: The authors' project aims to develop and evaluate an infographic-based online Pocket Guide to Quality Improvement (PGQI), a preliminary step to building a QI community of practice (CoP) for healthcare professionals. The authors consulted national and international resources for training healthcare professionals on QI and consolidated it into an infographic-based online pocket guide. The authors pilot-tested the PGQI on a convenience sample of pharmacists in Canada. Based on Kirkpatrick's four-level training evaluation, the authors designed and administered a 14-item online survey to gather their user experience in October 2021. The authors asked about their perceived knowledge, skills, and anticipated practice changes after reviewing the PGQI

**Results**: The authors developed an infographic-based online PGQI. Respondents' (n = 20) primary practice was diversely located in community, hospital, administrative, and regulatory authorities from six Canadian provinces. They reviewed the PGQI within 5-15 minutes and found the materials relevant and easy to understand. Notably, 70% of respondents perceived an increase in QI knowledge; 90% would recommend the PGQI to other healthcare professionals, and 65% were interested in planning a QI project in the next 12 months. Respondents appreciated the effective use of graphics, charts, and visuals to explain QI concepts. They suggested more external resources, QI examples, and case scenarios.

**Discussion**: The online PGQI presented QI concepts in an easy-to-read format. It will serve as a resource to support a virtual QI CoP for healthcare professionals. The authors' pilot revealed the PGQI can be easily accessible by pharmacists who wish to learn about defining, planning, and conducting a QI project.

## Social-emotional, ChatGPT-powered avatars in extended reality simulations: Upping the game to improve communication and build empathy

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**Background:** Join us to learn about and develop social-emotional XR avatars that exhibit complex verbal and non-verbal responses in conversation. These avatars create endless opportunities for learners to practice effective communication skills and provide a safe space for conversations about topics such as diversity, equity, inclusion, and others in a low-stakes environment that spans all demographics. Developing social-emotional XR avatars in virtual learning spaces provides students with opportunities to learn effective and empathetic communication skills that enable them to lead equitably, navigate cultural differences successfully, and maintain a mindset of improvement through immediate formative feedback and gamification.

**Methods:** In this session, the authors will talk and walk through the entire workflow of creating social-emotional XR avatars - to creating interactive training experiences around various topics, including minority women entering menopause, tobacco cessation, upset patient de-escalation techniques, and conversations about bipolar depression across the span of a patient's entire life! From there, the authors will discuss a wider range of applications, such as how to approach difficult topics with patients, patient intake and care, follow-up appointments, communication techniques for children with mental health and substance use concerns, diversity, equity, and inclusion tone checking, and more!

Diverse and equitable opportunities to improve communication skills and develop empathy are critical for the authors' learners of the future. Let us explore the growing power of simulation's potential and dive into helping you create these experiences for your learners as the authors continue to push the edges of how this technology is being used now and how an AR future will soon be as ubiquitous as your smartphone.

## Creating scholarships with students through Advanced Pharmacy Practice Experiences (APPEs)

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**Background**: Both pharmacy faculty and students express a need to gain more experience in scholarship. Solutions that utilise existing contact points are more efficient and likely to succeed. Teaching pharmacy students how to write peer-reviewed manuscripts during an APPE is an effective way to benefit both faculty and students.

**Methods:** Over a six-week APPE block, students are given the opportunity to pick a topic for a narrative review that is mutually interesting for both faculty and students. No prior experience on a given topic is necessary. However, faculty expertise can make the paper-writing process go more smoothly. Students then do an exhaustive literature evaluation and create a detailed outline of their manuscript with citations. Students use two weeks to write and revise their papers and select a journal for publication. The manuscript is submitted on the final day, and revisions occur during the students' personal time as needed.

**Results:** This APPE has been completed by 12 students over the course of 6 APPE blocks. The student paper was successfully written and published in a peer-reviewed journal 10 of 12 times, with the only non-completions stemming from loss of student interest after the block. Topics covered have widely varied, ranging from cannabis for pain to white noise for attention deficit hyperactivity disorder (ADHD). The majority of the students have used their publications to help secure a residency or fellowship after graduation. Additionally, the faculty member involved increases their publications and gets to educate students on writing for journal publications.

**Discussion:** The creation of an APPE that teaches students to create, write and publish a peer-reviewed publication is beneficial to both faculty and students. It increases scholarship for faculty in a primary teaching role and allows students to gain valuable knowledge of the writing/publishing process.

## From the learner's perspective: Increasing learner motivation, cognition and transference of knowledge in continuing education

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The value of pharmacy continuing education is in the art of the learner learning content and transferring the new knowledge or skill into the mind where it can be recalled and used in practice. In continuing education, we often lose sight of this value and spend much of our time focusing on standards, requirements, assessments, evaluations, and data. In truth, none of these impacts how the learner learns and then uses content. In this session, the authors will examine the learning process from the learners' perspectives, gain an understanding of how the adult learner's brain accepts and then utilise the new knowledge offered, and refocus on what's most important in the continuing education process. Participants will work through their own existing CPE and CPD programs and improve the process in ways that can maximise academic rigour, content cognition, and transference of knowledge.

## Preparing pharmacists for compassionate cannabis in the acute care setting

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**Background:** California became the first state to allow the medical use of Cannabis in 1996. Legislation passed in 2022 to require facilities to give patients access to medical cannabis. How to implement the law with consideration of other relevant statutes, regulations and enforcing agencies, as well as ensure patient safety, was not specified.

**Methods:** The Pharmacists' Cannabis Coalition of California (PCCC) reviewed the new legislation and determined that institutions needed to allow compassionate access to patients in their facilities or be at risk of legal action. PCCC reviewed state and federal laws to determine the legal status of different Cannabis compounds (e.g. tetrahydrocannabinol – THC, cannabidiol – CBD). Further analysis was done to determine the expectations of enforcing agencies such as the US Drug Enforcement Agency (DEA), US CMS, and the California Department of Public Health. Lastly, we collaborated with legislators to introduce further amendments to the law.

**Results:** PCCC created health care facility policies & procedures for 1) authorisation of the patient; 2) authorisation of medical Cannabis use; 3) verification of the Cannabis product; 4) institutional policies to maintain compliance with other laws and regulations; 5) references for Cannabis facts and drug interactions; 6) templates for documenting use and product description; and 7) educating health care professionals on Cannabis use. These materials were shared in webinars with the California Hospital Association, California Society for Health-System Pharmacists, California Pharmacist's Association and via continuing education webinars to pharmacists and the general public.

**Discussion:** While there remain conflicts between federal and state laws, the authors have created policies and procedures that mitigate risks from legal action, citation or accreditation. The authors continue to distribute drafts of these policies and templates to enhance understanding of the legal issues and minimise variability in implementation.

# Life Long Learning in Pharmacy Conference 2023: Blazing new trails

*Poster presentation*

### Advanced training residencies: The next step in pharmacist development

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**Background:** Following the introduction 2017 of Foundation Residency Programmes, in 2019, the Society of Hospital Pharmacists of Australia (SHPA) introduced Australia's first Advanced Training Residencies (ATRs) for pharmacists.

Unlike Foundation Residencies, which are generalist and aim to support early career pharmacist development, Advanced Training Residencies aim to produce practitioners further along the practice continuum, in a defined practice area, who can more expertly contribute to patient care.

**Methods**: ATRs are a 2-year structured developmental programme primarily workplace-based and competency-focused.

As ATRs can be undertaken in any practice area, SHPA developed a common framework which outlines the range of experiences required to enable pharmacists to reach the requisite practice level by the end of the programme.

The common framework also includes:
- generic tools and resources that sites can use to support the implementation of their pathway
- an evaluation and assessment matrix mapped to the pharmacist competency standards outlining the type and number of workplace-based assessments required for programme completion.

To contextualise the common framework for defined areas, practice area-specific frameworks and knowledge guides are being developed.

To date, frameworks have been developed for Cancer Services, Critical Care, Emergency Medicine, Geriatric Medicine, Infectious Diseases, Medicines Information, Medication Safety, Nephrology, Paediatrics, Mental Health and Surgery and Perioperative Medicine.

Since their inception, SHPA has accredited 15 health services to provide ATR programmes in 21 different practice areas, including:
- direct patient-facing areas such as general medicine and cardiology,
- in-direct patient-facing areas like leadership and management and clinical education; and
- novel areas such as opioid stewardship

**Results:** Fifty-six pharmacists are currently enrolled in ATR pathways, with the first cohort of 8 completing their ATR in the last quarter of 2022.

In mid-2022, SHPA will survey completed Advanced Training Residents and programme staff to determine the contribution of ATRs to professional development, gauge their attitude to the programme and identify areas for programme improvement.

## Incorporating a pharmacy technician Workgroup in continuing education planning to improve programme engagement

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**Background:** Pharmacy technicians are required to complete continuing education to advance their practice and maintain licensure. The development of targeted, relevant continuing education programs for technicians is part of the mission of most continuing education programs. To improve technician engagement and learning, a technician-based workgroup was developed to steer continuing education programming.

**Methods:** The Memorial Hermann Health System Continuing Pharmacy Education Programme (Houston, TX, USA) is an ACPE-accredited programme serving pharmacists and technicians within the health system. The workgroup was established through a system-wide call for technician volunteers in July 2022. The workgroup is led by the continuing education programme administrator and meets virtually once monthly on a volunteer basis. Workgroup members provide continuing education topic ideas, promote continuing education events at individual campuses, and provide feedback on past and planned continuing education sessions.

**Results:** The pharmacy technician workgroup includes 20 technicians in various job roles across 11 different campuses in the health system. Since July 2022, the workgroup has helped guide over three continuing education sessions targeted to the technician audience. The workgroup provided feedback on planning considerations, improved participation, and ensured the content was relevant and useful to technician job functions. Technician attendance in continuing education increased by approximately 12-fold in 2022 compared to 2021 (128 *vs.*11 participants). Overall, the continuing education programme awarded 128 technician credit hours in 2022 compared to 14.5 hours in 2021.

**Discussion:** Pharmacy technician feedback is vital to improving the quality of continuing education programming targeted to technicians. Prospectively incorporating technician input in continuing education planning improved technician engagement in the planning process and participation in educational programming.

## More altitude, less attitude: Evaluation of CPE activities presented by trainees versus other faculty members

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***Keywords:*** *Continuing pharmacy education, Fellowship, Trainees*

**Background:** The Rutgers Institute for Pharmaceutical Industry Fellowships provides post-graduate training for pharmacists and physicians to gain pharmaceutical industry experience through work and research. Fellows may fulfil their teaching requirements through CPE activity development. The quality of CPE planned and delivered by trainees versus other faculty members will be evaluated.

**Methods:** A retrospective analysis of anonymous activity evaluation results from 2016-2022 will be performed. Activity demographic information (e.g., joint *vs*. directly provided, interprofessional CE, delivery format, etc.) will be collected and analysed. Trends in activity outcomes (e.g. understanding of a subject, ability to collaborate, impact on cultural competency, evidenced-based and scientific validity, freedom of commercial bias, and meeting expectations) will be evaluated.

**Results:** From 2016-2022, 74 CPE activities were offered, accounting for approximately 500 hours of CPE, reaching an estimated 690 attendees. Of these activities, 19 (25.6%) were planned and presented by fellowship trainees. Investigators hypothesised there would be no difference in the activity outcomes evaluated in this analysis when comparing those CPE activities developed by fellowship trainees with other activity faculty.

**Discussion:** Encouraging trainees to participate in CPE activity planning and delivery represents an opportunity to introduce important professional skills to develop CPE faculty. Incorporation of trainees into CPE activity planning necessitates mentoring on CPE development to provide CPE that is comparable to professional faculty members.

## Leaders in Indigenous Pharmacy Profession Education (LIPPE) – Transforming the pharmacy workforce by embedding cultural safety in pharmacist education and training

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**Background:** The 2020 Australian Accreditation Standards for pharmacy programmes are underpinned by the concept of social accountability. This means addressing priority health concerns. Indigenous health is a national health priority, and as accessible health professionals, pharmacists can contribute significantly to improved health outcomes for Aboriginal and Torres Strait Islander peoples.

The Australian Pharmacy Council (APC) and the Council of Pharmacy Schools (CPS) are committed to a health system free of racism and discrimination through their respective roles in contributing to a culturally safe pharmacy workforce. Following discussions in 2021, the Boards of both organisations agreed to partner to support pharmacy programmes in the development and delivery of Indigenous health and cultural safety.

**Methods:** Led by Indigenous pharmacists, in May 2022, a network called Leaders in Indigenous Pharmacy Profession Education Network was launched. The network is dedicated to transforming the pharmacist workforce by enabling Indigenous leadership in the delivery of pharmacist education.

**Results:** Under the leadership of Indigenous pharmacists and in collaboration with other individuals and organisations, LIPPE is fostering transformational change in the pharmacy workforce, from the recruitment and retention of students to the provision of care in practice settings. The network has completed and published a literature review in which the authors examined health professional education programmes and curricula in colonised countries. The authors have supported an explorative study on cultural safety practices in pharmacy programmes and have delivered several webinars to engage educators and the profession in this journey. With over 120 participants signed up, the network is growing in strength and capacity.

**Discussion:** The network is dedicated to transforming the pharmacist workforce by enabling Indigenous leadership in the delivery of pharmacist education. Culturally safe pharmacy practice can only be achieved when Indigenous leadership is empowered so that Indigenous values can shape the context of training and education as well as service delivery.

## Taking a collaborative approach to developing a minor ailments Continuing Professional Development (CPD) programme in Ontario, Canada

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**Background:** Pharmacists in all Canadian provinces have, or will soon have, prescriptive authority for minor ailments (MA). As MA authority was coming to pharmacists in Ontario, the need for an educational programme was identified. Two organisations that typically produce programs independently collaborated on the design and delivery of an MA programme.

**Methods:** Based on previous success developing a programme for their overlapping audiences, the University of Waterloo School of Pharmacy and the Ontario Pharmacists Association (OPA) collaborated to prepare pharmacists for an upcoming scope of practice expansion. Based on elements of the University's Pharm.D. curriculum, a series of 6 units were developed. The mandatory introductory unit covers the fundamentals of providing a minor ailment service, including conducting a structured assessment, generating and implementing a care plan, documentation, monitoring and follow-up. Optional units cover therapeutic topics, including pathophysiology, possible causes and risk factors, identification of red flags and application of the care process.

**Results:** Designed for online self-directed learning, the programme (accredited for 9 CEUS by the Canadian Council for Continuing Education in Pharmacy) launched in June 2021 (Ontario Pharmacists Association, 2021). Several University of Waterloo faculty members contributed as authors and OPA members acted as expert or practitioner reviewers, adding to content relevance. Minor updates were implemented, and accreditation was renewed in June 2022. As of May 25, 2023, 1,600 participants had successfully completed the course, exceeding initial registration expectations. Regulations allowing Ontario pharmacists to assess and prescribe for 13 minor ailments were implemented on January 1, 2023 (Ontario Pharmacists Association, 2023). Six additional ailments/conditions will be added in October 2023.

**Discussion:** The success of this programme demonstrates that two organisations with different mandates can

collaborate to produce relevant and timely CPD programming. Feedback has been positive, scoring very good to excellent in overall experience (84%), enhancing knowledge (76%), identified changes to practice (77%), and expecting positive changes in patient outcomes (81%).

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## The global pandemic and pharmacist prescribing training – An opportunity for curriculum re-design

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*Keywords: Pharmacist prescribing, Remote delivery Workforce development*

**Background**: NICPLD has been training pharmacists as prescribers since 2003. As prescribing services have developed, and with the knowledge that newly qualified pharmacists from 2026 onwards will be prescribers, demand for training places has increased year-on-year. Lessons learned from the COVID pandemic have influenced programme design to meet the increased demand.

**Methods**: In 2020, the prescribing course was significantly modified to accommodate restrictions in place as a result of the global pandemic. Strategies were implemented to maintain student learning, with most face-to-face courses replaced with a mix of synchronous and asynchronous remote teaching.

The teaching of clinical skills was deemed inappropriate for complete remote delivery, and a modified module was developed. This consisted of one-to-one teaching over a condensed period of time, with students taught socially distanced in teaching bubbles using PPE, supplemented with synchronous and asynchronous remote teaching.

Consultation skills assessment was undertaken remotely, which reflected service delivery at that time.

**Results**: The global pandemic provided an opportunity for curriculum re-design. Student feedback around remote delivery of teaching was positive, with the cohort pass rate unchanged and the application rate for the next cohort remaining high.

This serendipitous finding prompted reconsideration of curriculum delivery. Subsequently, the number of face-to-face workshops has been reduced, with pre-recorded lectures and synchronous workshops, both delivered remotely, maintaining the teaching content. Skills teaching was considered unsuitable for remote delivery, and hence, clinical and consultation skills teaching remain face-to-face, enabling enhanced support of trainees in the development of these advanced skills.

**Discussion**: Increasing demand for training places has necessitated a re-think of curriculum delivery. The global pandemic provided experience of new teaching strategies, which were shown to have no detrimental impact on learning. The integration of such strategies allows NICPLD to increase capacity, supporting pharmacy workforce development in line with national policy.

## Supporting workplace-based training: Evaluation of a clinical educator training programme for pharmacists

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**Background:** Pharmacist education in the workplace is shifting towards competency-based education (CBE), extending to undergraduate and pre-registrant pharmacist training. CBE relies on pharmacists providing effective clinical supervision and feedback. Pharmacists often contribute to the development of learners without formal training due to a shortage of relevant pharmacy workforce programmes.

**Methods:** The authors aim to describe the development and evaluation of a Clinical Educator Training Programme (CETP) for pharmacists. The CETP was developed by experts in clinical supervision and has undergone several iterations based on stakeholder feedback. It is accredited as a formal CPD programme with the Australian Pharmacy Council (APC). The CETP is undertaken online over three weeks through a series of discussions, multimedia learning and self-reflection. The CETP's major topic themes are "*Educational theory and focus on learning*", "*Communication skills for supervisors*", and "*Problem solving and evaluation*". Multiple intake

opportunities are offered throughout the year with consistent, experienced facilitators.

**Results:** Between January 2021 and June 2022, 264 pharmacists completed the CETP, with 162 of those completing an anonymous evaluation survey. Overall, 155 (96%) and 152 (94%) participants strongly agreed or agreed that the programme material was relevant to their role as clinical educators and enhanced their knowledge in supervising pre-registrant pharmacists, respectively. The majority of participants strongly agreed or agreed that shared reflection discussions (84%) and case studies (93%, n=162) enabled them to apply the theory learned in the programme modules. Providing effective feedback and understanding learning styles were identified as the most useful topics of the CETP.

**Discussion:** The CETP described provided a flexible online programme to support the development of busy pharmacists new to the clinical supervisor role. Participants perceived that completing the CETP enhanced their knowledge to supervise pre-registrant pharmacists. Further studies should investigate the impact of such training on the participants' observed clinical supervision skills.

## Evaluating student engagement with online learning

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**Aim:** Evaluate student engagement with online learning modules provided as part of the Newly Qualified Pharmacist program.

**Objectives:**
- Determine when students start the e-learning prior to study day attendance.
- From self-reported estimates, establish the time that students spend on the e-learning per module.
- Determine whether the students complete the e-learning module.
- Ascertain students' overall satisfaction with e-learning modules
- Determine the percentage of students who engage with online socialisation elements of e-learning modules.

**Method**: The online learning platform used by the NQP programme links to a learning management system (LMS). Data about student interaction with online learning from the LMS can be accessed via the university's Blackboard site.

Students are asked to evaluate the e-learning at the end of each module by completing an online questionnaire. Part of this questionnaire asks them to estimate the amount of time that was spent on the e-learning and to state how they rated the e-learning module overall, using a Likert scale of 1-5.

Data was gathered from both the e-learning evaluation forms and the Blackboard site to evaluate student engagement with modules that were delivered by the NQP programme from October 2022 to March 2023.

The data was analysed using descriptive statistics.

**Results:**
- Students vary widely in when they start the e-learning. Some started the day before a study day, others well in advance.
- The NQP e-learning modules are rated highly by students. However, they are not spending as long on learning as expected by the university.
- Most students are completing the e-learning or are spending significant time on it. However, some students do not appear to be using the interactive e-learning. It is possible that they are using the PDF version provided instead. However, this is not the university's intention.
- Students are engaging with online socialisation elements of the programme.

**Discussion**: The self-determination theory purports that students need perceived competence, autonomy, and relatedness to facilitate intrinsic motivation. Further investigation into why some students didn't complete the e-learning, why some started it so late and why some modules had minimal time spent on them is vital to encourage student engagement and motivation.

## The influence of the learning environment on the learning experiences of health profession students and the development of professional identities

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***Keywords:*** *Learning environment, Health profession education, Perception, Professional identity*

**Background:** Improving students' learning environment (LE) in health profession education programmes continues to be an important yet challenging process because it influences their learning and practice outcomes and professional identities (PI). This study aims to examine the perceptions of Qatar University- Health Cluster (QU-HC) students of their LE and their PI.

**Methods:** A cross-sectional research design was followed, utilising the previously validated Dundee Ready Educational Environment Measure (DREEM) and the Macleod Clark Professional Identity Scale-9 (MCPIS-9) tools to assess the students' perceptions of LE and their PI, respectively. The adapted questionnaires were administered to the students from the four colleges in QU-HC (n=909), including the Colleges of Pharmacy, Medicine, Health Sciences, and Dental Medicine. Descriptive and inferential statistics were performed using IBM Statistical Package for Social Sciences (IBM SPSS$^{\lozenge}$27 software). Non-parametric statistics were used to compare different subgroups in an analysis that targeted college, gender, professional year, and previous clinical internships.

**Results:** This study helped in identifying the positive and negative aspects of the QU-HC's LE as perceived by the students. This includes students' perceptions of teaching, teachers, LE atmosphere, students' academic self-perceptions, and students' social self-perceptions. Furthermore, the study helped to identify important aspects of students' PI development, such as considering their profession a rewarding one and participation in their community and profession. A correlation between the high perception of the learning environment, learning outcomes, and professional identity was observed. Furthermore, the study revealed problematic areas of LE in QU-HC, as perceived by students, that may need some remedial measures for continuous quality improvement.

**Discussion:** The study is the first in QU-HC to measure the perception of students regarding different domains of the LE and PI and to compare that with other regional and international institutions. The results of this study will help implement key changes that will ultimately enhance the learning experiences of health profession students.

## A systematic review of the assessment tools for examining the quality of learning environment in health professions education

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**Background:** Recently, growing attention has been observed by the accrediting bodies of health professions education programmes to the quality of the learning environment due to its importance in determining students' overall learning experience. Hence, identifying validated and reliable tools to assess LE is essential.

**Methods:** A systematic review search of four databases (PubMed, ERIC, ProQuest, and Cochrane) was conducted to identify primary research studies using five key concepts: Higher education, questionnaire, LE, perception, and HPs. Studies included were conducted in HPs education and published in English since 1940. No study design restrictions were applied. Two independent investigators performed study selection, and the inter-rater agreement was measured. A data extraction sheet was created to summarise studies according to the identified instrument, the context of use, discipline, validity and reliability assessments, strengths and limitations, and overall biases. The protocol was registered in the Research Registry (no.1429).

**Results:** The search strategy yielded 41 questionnaires. Content and internal structure evidence received the highest ratings and were reported in more than 50% of the included studies. The highest number of identified questionnaires were from the professions of medicine and nursing, followed by the profession of dentistry, and none of the identified tools were from the pharmacy profession. The most widely used instrument in evaluating undergraduate LE across different health professions is the Dundee Ready Education Environment Measure (DREEM). Also, only a few tools are designed to examine the perceptions of students who belong to various HPEPs in a multi-disciplinary LE.

**Discussion:** The findings of this review revealed that DREEM was the most commonly used questionnaire across different professions and was widely adopted in various countries and cultures worldwide. Its wide use might be related to the network effect created by the original developers collaborating with different international institutions.

## An examination of pharmacy students' perspectives on blended learning

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**Keywords:** *Assessment, Blended learning, In-person, Online, Pharmacy, Skill*

**Background:** In response to the COVID-19 pandemic, a blended instructional model comprising asynchronous and synchronous online activities and in-person classes was implemented at the Monash Pharmacy. Online learning consisted of readings, short video clips, self-test quizzes and live-stream webinars. In-person learning components included small group workshops facilitated on campus.

**Methods**: The study aims to provide an overview of blended learning from the perspective of pharmacy students to optimise student learning and engagement and instructional design. A retrospective, observational, cross-sectional survey was implemented in the form of a 5-point Likert scale. The survey questionnaire was distributed electronically to undergraduate pharmacy students. The study examined students' perceptions, satisfaction and engagement in online *vs*. face-to-face classes and assessments in various disciplinary areas such as enabling sciences (physiology, pharmacology), technical sciences (drug delivery, formulations), pharmacy practice, therapeutics and clinical pharmacy. An open-ended question was used to gather qualitative student feedback.

**Results:** Over 60% of participants (32) preferred live-stream lectures for clinical pharmacy and pharmacy practice topics compared with <50% for enabling and technical sciences. 30% agreed that online Zoom workshops enabled effective participation and contributions in team tasks. 75% felt less anxious to take an online assessment than on campus. However, 40% believed OSCEs that assess professional skills such as verbal and non-verbal communication would be harder to perform online than in person. 60% perceived online assessments were easier than on-campus exams. Qualitative data showed students perceived flexibility as the key benefit of online learning, whereas connecting with peers and instructors was seen as a major limitation.

**Discussion:** The majority of students preferred a blended instructional model consisting of online asynchronous and synchronous lectures for content knowledge and application-focused in-person workshops. Online components enabled flexibility, self-directed learning and the development of a life-long learning mindset, whereas in-person learning opportunities were essential to the development and assessment of professional skills, including verbal and non-verbal communication and teamwork.

## Summit all up: Engaging pharmacy industry fellows in Continuing Pharmacy Education (CPE) activity planning to support lifelong learning

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**Keywords:** *Continuing pharmacy education, Life-long learning, Learner development*

**Background:** Accredited continuing pharmacy education (CPE) providers are encouraged to promote team-based education by engaging trainees in activity development. By encouraging such participation in CPE activity development as planners and speakers, it is hypothesised this experience fosters life-long learning and provides experiences that will be incorporated into future professional roles.

**Methods:** The Rutgers Institute for Pharmaceutical Industry Fellowships (RPIF) programme provides post-graduate training for pharmacy and medical professionals to gain pharmaceutical industry experience. Fellows may fulfil their teaching requirements through CPE activity development. To evaluate the impact of CPE activity development, investigators will conduct a mixed-methods investigation to quantify the fellow CPE experience. A focus group, comprised of current RPIF fellows who have participated in CPE activity planning, will be conducted to inform an electronic survey instrument to be administered to all previous fellows involved with CPE planning from 2016-2022. Institutional Review Board approval will be attained.

**Results:** From 2016-2022, 19 CPE activities were planned and presented by fellowship trainees, encompassing approximately 40 RPIF fellows. Feedback from current fellows participating in CPE activity planning during their training will be invited to provide feedback on a survey instrument intended to capture their educational experience and impact on professional development attributed to CPE planning during their fellowship training. Feedback will be utilised to inform the survey instrument to be distributed to all RPIF fellows who have participated in CPE activity planning during the specified timeframe. Investigators anticipate having results and data analysis completed in Spring 2023.

**Discussion:** Fostering connections across the healthcare education training continuum by creating an environment that encourages interaction between pharmacy trainees and practising professionals facilitates life-long learning needs for those involved. Involvement in CPE activity planning during a post-graduate fellowship experience is anticipated to have sustained impacts on professional experience.

## Incorporation of pharmacy technicians into the medication administration process in a national paediatric cancer inpatient service: An implementation study

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**Background:** Extending the role of pharmacy technicians to include supporting nurses in the administration of medicines has the potential to meet current nursing workforce pressures. Pharmacy technicians were introduced to the medication administration process in an Irish paediatric inpatient ward. The study objectives were to evaluate the implementation of the service quantitatively and qualitatively by employing CFIR constructs to determine the service viability and its limitations.

**Methods:** Mixed methods study consisting of a descriptive study of the activity performed by two pharmacy technicians and qualitative interviews exploring the implementation of the service along with post-analysis confirmatory anonymous surveys. Activity data was collected by conducting an observational study of patients receiving IV medicines in line with the new service, along with pre and post-implementation analysis of medication incident reporting.

Ten semi-structured stakeholder interviews were conducted. Interviews were transcribed verbatim and analysed using the framework approach guided by CFIR. The survey was then designed to triangulate the data seen in interviews and allow the opinions of the wider nursing team to be heard in an anonymous forum.

**Results:** Pharmacy technicians assisted in the preparation and administration of 920 intravenous injections out of a possible 4447 (20%) of all intravenous injections during the study period. One hour per day of nursing time was released back to patient care, and there was an increase in reporting of near misses and risk issues (NCC MERP category A and B).

Key themes identified from qualitative data included adaptability of the service, training and education for service users, positive impacts of the service on work culture and medication safety, the importance of building interprofessional relationships, and the current and future utilisation of hospital pharmacy technicians.

Survey respondents were supportive of pharmacy technicians in this new service, with 100% (n=22) agreeing that pharmacy technicians can perform in this new role, and 95% (n=21) respondents believe that the addition of pharmacy technicians to the IV medication rounds is an improvement on the previous service.

**Implications:** This study shows that combining the care-orientated skills of nursing staff and the technical skill mix of pharmacy technicians can provide an acceptable and safe medication administration service.

## Waking up to flipped classroom approaches for impactful education – An example of an educational intervention on sleep health for second-year pharmacy students

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**Background:** Pharmacists are usually the most frequently consulted professionals in primary care for health concerns, such as sleep disturbances. Conventionally, curricular space devoted to sleep health has been insufficient, and this has resulted in suboptimal care provision. For example, pharmacists often provide over-the-counter/complementary sleep aids rather than the recommended behavioural counselling for insomnia management. Clearly, pedagogically informed learning experiences about sleep health and insomnia management are important to improve practice.

**Objectives:** To develop, implement and evaluate an interactive sleep health educational intervention for 2nd-year pharmacy students.

**Methods:** An educational intervention utilising a flipped classroom approach, with interactive lectures, self-reflection around personal sleep habits, and role-playing behavioural

treatment provision, was designed and implemented. Constructive alignment between all components of the intervention - lecture, self-directed activities, workshop and pre-post assessment was undertaken prior to delivery. A questionnaire assessing pre - and post-intervention changes in knowledge about and attitudes towards sleep, as well as post-intervention learning satisfaction, was administered to students.

**Results:** Mean total knowledge scores improved significantly post-intervention from a baseline of 11.1 ± 3.8 to 17.1 ± 3.5 post-intervention, $p < 0.05$ (Score range= 0-25). The mean total attitudes scores also improved from 28.8 ± 3.2 at baseline to 29.4 ± 3.8 (Score range= 10-50), $p =0.07$; however, this change was insignificant. Students provided many open-ended comments on the post-intervention questionnaire. There was a high level of satisfaction with the educational module. Sleep diary completion rated highly as students found learning about their own sleep most illustrating - many reported changing their sleep behaviours in line with what they had learnt.

**Conclusion:** Carefully crafted educational interventions for pharmacy students can help improve clinical knowledge through meaningful activities. Such programmes should be incorporated into pharmacy pre-registration curricula to potentially enhance future pharmacists' skills in chronic disease management provision.

## A collaborative way to gain user feedback for healthcare educational media

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**Background:** Podcasts are an emerging form of knowledge dissemination. The authors' Global Classroom Podcast Series features experts from interprofessional backgrounds discussing their efforts in patient and medication safety. To facilitate programme evaluation, the authors aim to explore an innovative way to promote the dissemination of and acquire feedback for the authors' multimedia-based educational initiative.

**Methods:** In July 2022, the authors engaged and collaborated with a student club in the institution's pharmacy programme to promote, disseminate, and invite feedback for the authors' podcast series (i.e. the "*event*") on their social media page. The podcast episodes were released daily sequentially, each accompanied by a post describing the interviewee(s) and an episode-specific Google Form feedback survey. As an incentive, the authors awarded student society points to viewers who submitted feedback.

**Results:** A total of 169 individuals were invited to the event on the social media platform; 10 individuals attended the event, and 11 expressed interest in attending. The authors received one additional feedback form by the end of the data collection period, increasing the authors' total number of feedback entries from seven to eight. To protocolise this new incentive-oriented strategy in promoting and disseminating healthcare educational initiatives to pharmacy students, the authors created a standard operating procedure (SOP), which will serve as a guide to support future marketing of new educational initiatives through collaboration with clubs in the student body.

**Conclusion**: Despite a few submitted feedback forms, attendance was much higher. Attendees may have watched podcast episodes without submitting feedback. Future events during regular academic terms may promote attendance and feedback acquisition. The authors' initiative and SOP aid pharmacists and educators gather feedback on healthcare educational innovations to facilitate continuous quality improvement.

## Virtual reality simulation of suicide risk assessment performed by pharmacy learners

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**Background:** With the COVID-19 pandemic, there has been an increased prevalence of suicide ideation and mental health concerns in the healthcare system. Community pharmacists are often the first point of contact for patients with healthcare needs. It is crucial for pharmacists to be trained in interacting with patients at risk of or with ideations of suicide. Virtual reality (VR) offers pharmacy learners the opportunity to conduct a Suicide Risk Assessment (SRA) in a simulated clinical environment. This pilot study builds on preliminary findings from VR SRA user testing.

**Purpose:** To explore the feasibility and risks/benefits of using VR as a tool for pharmacy learners to be trained in conducting an SRA.

**Methods:** Six pharmacy students participated in the VR SRA training session at the Centre for Addiction and Mental Health (CAMH). Students were given the opportunity to try two different patient profile simulations using VR headsets, where various pre-developed questions prompted specific dialogue. A self-reported pre- and post-training evaluation was used to

identify changes in confidence pertaining to the learning objectives, engagement, general tolerability of VR, intention to change practice, and the overall training experience. A group debrief session was conducted after the training.

**Results:** Post-training evaluations showed that VR was associated with relatively high scores for meeting the learning objectives (M=3.17 out of 5, SD=0.79) and was regarded as an engaging training experience. User testing suggests that VR may have greater educational benefits than traditional desktop tools for teaching pharmacy students how to conduct an SRA.

**Conclusion:** Participants reported overall satisfaction with the training, and gains in confidence were seen across most of the learning objectives when comparing pre-and post-training evaluation scores. This pilot study will help inform the healthcare simulation community about the effectiveness of VR as a teaching modality in pharmacy education and practice.

## Pharmacist prescribing for minor ailments: An opportunity for virtual interactive case system innovation

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**Background:** Current literature on virtual cases illustrates increased learner confidence and satisfaction. The use of virtual cases has not been explored in the context of Canadian pharmacist prescribing for minor ailments (PPMA). Providing continuous professional development opportunities that simulate practice via the Virtual Interactive Case (VIC) System may facilitate PPMA uptake.

**Methods:** The authors' pilot study aims to seek user experience of three minor ailment cases (allergic rhinitis, conjunctivitis, and herpes labialis (cold sores)) that were developed on the VIC System to inform the development of future PPMA VIC scenarios. An online user experience and feedback questionnaire was disseminated to pharmacy professionals and pharmacy learners who have completed at least one of the three pilot PPMA VIC scenarios. The authors asked about participants' subjective/perceived changes in confidence in conducting PPMA patient assessment, implications, and intention to practice changes after attempting the VIC cases.

**Results:** Feedback to the pilot PPMA VIC scenarios was generally positive. Of the 21 responses, 95% indicated that the scenarios were easy to understand and follow. The majority (62%) of participants agreed or strongly agreed that after completing the scenarios, they perceived an increase in confidence in conducting patient assessment and management of minor ailments. Suggestions for VIC System improvement included revising some of the patient interview questions and incorporating comprehensive scoring and feedback in the final debriefing of the scenarios.

**Discussion:** The VIC System may help support and stimulate pharmacist confidence and uptake in minor ailment prescribing. Ten additional VIC cases have since been developed and refined with input from the results of this pilot study in response to participants' interests. This digital innovation may be adapted to other educational programmes.

## Comparing final accuracy checking skills of pre- and post-qualification pharmacy technicians: Is there a difference?

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**Background:** In the UK, the new Initial education and training standards for pharmacy technicians (PTs) (published by GPhC, 2017) included final accuracy checking as part of pre-registration training. Prior to this, pharmacy technicians completed their final accuracy checking competency and assessment at least one-year post-qualification.

**Method:** To identify if pass rates were different for pre-registration trainee pharmacy technicians (PTPTs) undertaking accuracy checking exams during their two-year qualification, the authors analysed exam result data of PTPTs who undertook their final accuracy checking exam after completing 500 accurately checked items in the workplace. This was compared to exam result data of qualified PTs who completed their exam after a minimum of 12 months post-qualification and completed 1000 accurately checked items in the workplace.

Further analysis was undertaken to identify trends in types of errors missed and if this could be linked to workplace experience.

**Results:** Data from three different first-attempt assessments of each group using the same examination packs was analysed. Results show:
Pack A: 55% (n=31) PTs and 48% (n=27) PTPTs passed
Pack B: 81% (n=43) PTs and 30% (n=27) PTPTs passed

Pack D: 81% (n=59) PTs and 86% (n=15) PTPTs passed

Data analysed to establish if PTPTs with pharmacy experience prior to starting their qualification performed better shows that 18 PTPTs (n=42) in Cohort 1 had prior pharmacy experience, and of these, 10 (55%) failed their assessment. In Cohort 2, 10 PTPTs (n=28) had prior pharmacy experience, and of these, 5 (50%) failed.

**Discussion:** Pass rates for both groups are similar except for pack B, where one drug accounted for failure in both groups, suggesting that skills are comparable. Experience as a pharmacy assistant prior to PTPT training did not appear to influence PTPT pass rates. PTPTs who failed went on to pass at re-assessment.

## The ripple effect of opioid use disorders: Reducing the spread of bias through curricular enhancements

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**Background:** Witnessing a family member or friend develop an OUD can be a painful experience. This phenomenon, labelled secondary exposure (SE) to OUD, however, has not been fully explored in the literature. Preliminary data demonstrates that exposure to a loved one who misuses opioids may diminish the bystander's well-being.

**Objective/Aim:** The pilot study objective is to more fully understand and explore the influence of secondary exposure (SE) to OUD overdose-related deaths, overdose survival (via Narcan), and/or misuse of opioids on healthcare students' health, academic performance, and how stigma about OUD may impact clinical care.

**Method:** A prospective, 20-question conditional survey utilising skip-logic was sent to all graduate and undergraduate students within the College for Health Professions at Regis University. It was administered through Qualtrics, fielded from 11/2/2020-1/9/2021, and designed to understand the prevalence, exposure, and impact of OUD. Questions were designed using a dichotomous yes/no or a 5-point Likert scale. The analysis included descriptive statistics.

**Results:** The authors surveyed 2,028 students, with 358 who responded, with an overall response rate of 18%. Many of the respondents have interacted with individuals who have an OUD, but fewer students experienced loss due to an opioid OD-related death. 71.4% of respondents said they had interacted with someone who had misused opioids within their lifetime, whereas 28.5% had not experienced this SE to OUD. Respondents who had observed OUD-related stigma was 66%, which comprised Nursing (15%), Counseling and Family Therapy (13.7%), Physical Therapy (13%), and Pharmacy (12.7%); Health Services Administration and Occupational Therapy students (11.5%), combined. Exposure to OUD has a greater impact on mental health as compared to physical health. When examining the respondents' comfort level in discussing stigma/bias surrounding OUD, the authors found that the comfort level varied by the student's current area of study.

**Discussion:** An unaddressed ripple effect of OUD is the burden felt by those who are intimately/socially tied to these individuals. It is paramount to acknowledge that both explicit and implicit biases regarding OUD exist. educators of healthcare professionals should support these conversations during coursework and clinical training by recognising the potential impact of SE through data, which will lead us closer to high-quality healthcare interactions.

## Does Team-Based Learning (TBL) in the pharmacy classroom foster leadership skills in the workplace?

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**Background:** The use of Team-Based Learning (TBL) in the education of health professionals has emerged as one of the more common active learning strategies. In various anecdotes with preceptors, it had been observed that student pharmacists educated in a TBL classroom exhibited increased skills in the affective domain.

**Objective/Aim:** This qualitative pilot study begins to examine affective domain skills that are important to pharmacy practice and which of those skills may be developed uniquely through TBL.

Design/Method/Methodology: Random samples of preceptors and students (first through fourth-year cohorts) were engaged using a predesigned interview protocol to guide the discussion. The interview protocol was focused on determining leadership skills that are important in the workplace. Students rated the importance of TBL's contribution to the development of associated attributes. A grounded theory approach was utilised to develop an *a priori* theme codebook that was utilised to analyse preceptor interviews and student focus groups.

**Results:** Nine preceptors were interviewed, and 23 student pharmacists (SP) participated in focus groups. Preceptors

identified top themes: 1) communication, 2) emotional intelligence, 3) education, 4) time management, and 5) advocacy as important to being a leader. Students identified 1) communicating with/listening to others, 2) accountability/responsibility, 3) patience, and 4) self-reflection / feedback as skills developed by TBL. Participants indicated the importance of leadership skills to be a pharmacist, that communication was rated as one of the most important affective domain skills, and that they believed that TBL was a contributor to the development of affective domain skills among student pharmacists.

**Discussion:** Among preceptors and SPs, this initial study found both alignment and divergence with identified skills in the affective domain related to the development of leadership skills. Additional research is needed to explore the role of TBL in affective skill development in the pharmacy profession further.