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CONFERENCE ABSTRACTS

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Poster presentations

Analysis of patient harm from the impact of hospital discharge orders on community pharmacists' workload in Canada

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Introduction: Hospital discharge prescriptions are associated with increased risk of medication-related harm to patients. 43% of patients experience unintentional medication errors at discharge and most are put at risk for moderate harm as a result.

Community pharmacists provide patient care by assessing accuracy of discharge prescriptions; safety, efficacy and appropriateness of medications; barriers to medication access and medication education needs.

Method: 125 community pharmacies in New Brunswick, Canada with a digital reporting system were selected to report events involving hospital discharge prescription orders.
Aggregated, anonymous and de-identified data analysis was conducted selecting the "Transitions of Care" related medication safety events over 3 months in 2025. Event types included "Good Catch " and "Incidents". 7 mandatory data categories that were measured included: Situation with risk, What happened, Date/time, Medication management process Stage, Drugs involved, Harm level, Contributing factors

Pharmacists and pharmacy staff reported harmful discrepancies, errors and medication related harm from hospital discharge prescriptions using Pharmapod, a cloud based incident management platform. Reporting these events is a mandatory expectation in the province as they can lead to patient harm. Data collected was both quantitative and qualitative.

Pharmacies participating in the study received weekly information and updates, roles and responsibilities clarification as well as remind them to report discharge order discrepancies.

Results: Our findings underscore the complexities involved in patients and their families undergoing transitions of care from hospital to home and the complexities involved in the community pharmacies assessing the accuracy of discharge prescriptions. When medications are changed in hospital without coordination or clear communication, there were higher rates of medication-related harm.

Conclusion: Navigating the transition from hospital to home can be challenging for patients, their families, and community pharmacists. Community pharmacies in New Brunswick Canada found multiple discrepancies, errors and harm from hospital to home discharge orders. Communications in the system are compromised, causing harmful delays or poor decisions leading to patient harm. As an subsequent study of

the New Brunswick Horizon Health Network Hospital to Home project in 2024, this study in 2025 confirmed that improvements to communications and implementing more pharmacist led transitions of care is recommended.

Exploring the concept and definition of scope of practice in pharmacy: A systematic review

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Background: The term scope of practice has become increasingly used within the pharmacy profession, yet it's definitions and interpretations remain varied and diverse. This creates barriers to establishing a common understanding, fostering meaningful debates, and effectively communicating the concept to external stakeholders and in research. Descriptors such as "advanced", "current", "expanded", or "full", are added to the term scope of practice creating further obfuscation.

Purpose: To identify definitions of scope of practice for the pharmacy profession and propose a definition that could be adopted locally, nationally and internationally

Method: A systematic review was conducted. PubMed, Scopus, and Web of Science were searched to January 2025. The grey literature was also searched using Google Scholar and Overton given that many of the reports do not appear in the published literature. Cochrane methodology for systematic reviews was followed for searching peer-reviewed literature and the methodology by Godin et al. was used for searching grey literature. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement was utilised to guide reporting of this systematic review. Study details were recorded in a data extraction form. Publications were screened by title and abstract and selected papers were formally subjected to inclusion and exclusion criteria. Studies were included in the review if they were a systematic review, review or original papers providing a definition for scope of practice in pharmacy. The search was limited to studies published in English. Reference lists of included papers were searched to identify any relevant publications. Two additional reviewers provided input to resolve uncertainties about publications and after discussion, consensus was reached. For this review, Unique Definitions are defined as those that are original, while Referenced Definitions referred to those citing definitions from other sources.

Results: 2669 records were initially retrieved from the peer reviewed databases and following the removal of duplicates, 1241 unique records underwent screening based on title and abstract. 31 records met the criteria for inclusion. From the grey literature search, 1,158 records were assessed and 49 met the criteria for inclusion. 172 definitions were identified across all records. Of these, 76 were unique definitions, while 96 were referenced definitions. The various terms used to describe scope of practice were identified and included the terms 'advanced scope of practice', 'core scope of practice', 'current scope of practice', 'elastic scope of practice', 'enhanced scope of practice', 'expanded scope of practice', 'extended scope of practice', 'full scope of practice', 'individual scope of practice', 'prescribing scope of practice', and 'traditional scope of practice'.

Conclusion: The results highlight the variation in how the term scope of practice is defined and described within the pharmacy profession. This variation underscores the need for greater clarity and international consensus on a standardised definition and descriptors for the term. Establishing such clarity would enhance professional understanding, policy development, and the advancement of pharmacy practice worldwide.

Pilot study on digital communication between community pharmacists and general practitioners

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Introduction and purpose: Efficient communication between pharmacists and general practitioners (GPs) is important for optimal patient care and medical outcomes. Currently, all queries that need to be addressed to the GP regarding a patient's prescriptions or medications must be done by phone. This process is very time-consuming and sometimes not feasible. Although a national digital communication system about patients exists, it has not been implemented between community pharmacists and GPs. A collaborative project involving the Norwegian Pharmacy and Pharmacist associations, along with two GP associations, was established to test this system on a small scale.

The purpose of the study is to assess and gain experience in using digital communication when pharmacists have questions for GPs about prescriptions or patient medications, and to compare this with the current use of telephone.

Method: The study will describe the extent, communication themes, practical implementation, benefits, and experiences of telephone calls versus digital communication between GPs and pharmacists. Data is collected through electronic reporting by the recruited pharmacists for each telephone and digital message sent or received. Additionally, data is gathered from electronic questionnaires completed by all participants. Statistics will also be extracted from the pharmacy systems on the number of dispensed prescriptions during the project period.

Results: A total of eight pharmacies and 22 GPs were recruited to test the system. The study is in progress, and the results will be presented at the upcoming conference.

Conclusion: A pilot study is currently running with the purpose of gaining experience in using digital communication between pharmacists and GPs about prescriptions or patient medications. The results will guide future decisions on implementing a national digital communication system.

Use of comics as a tool to educate junior high school students in the Ashanti Region; Ghana about antimicrobial resistance and its impact on knowledge

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Introduction: Antimicrobial resistance presents a growing concern worldwide. A core focus of the WHO Global Action Plan on AMR is; improved awareness and understanding of antimicrobial resistance (AMR). “the children are the future”. Public health campaigns geared towards the youth at a prime stage in their lives can influence perceptions, attitudes, and behaviour towards AMR. Early childhood education is known to impact significantly awareness and understanding of relevant public health issues. Recent studies have shown visual media to improve knowledge and awareness of various key issues including AMR.

Method: Comics for education on AMR were designed by the lead researcher and administered to 30 randomly selected students between the ages of 11 – 15 years from 2 Junior High Schools (JHS) (15 per school). A structured self-administered questionnaire was given to the students to assess for awareness and knowledge of AMR before and after going through the comics.

Results: Only data from participants completing all questions in the questionnaires were used in the final analysis. Baseline responses before the study showed that 5% (1/22) of participants said AMR is caused when a person takes antibiotics without speaking to a health professional first. 13.6% (3/22) of participants said the misuse of antibiotics causes AMR. 50% (11/22) of participants said the overuse of antibiotics increases the incidence of AMR and 7/22 (31.8%) of participants said that they had no idea what AMR was about.

Post-study data showed an 82% (18/22), 91% (20/22), and 82% (18/22) increase in responses respectively from participants and 0% (0/22) of participants responded that they had no idea about AMR.

Conclusion: The comics proved to be an excellent tool for improving awareness, among the JHS Students. There is a need to enrich existing courses about antibiotic use in the curricula of primary schools with more emphasis on AMR. Increasing the scale of this dissemination using comics in Ghana among other high schools could increase AMR awareness and reduce its progression.

Determining the impact of pharmacists on treatment adherence in patients with Coronary heart disease in Ukraine

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Background: Coronary heart disease (CHD) is the leading cause of cardiovascular mortality in Ukraine. The incidence of CHD has increased under the influence of war-related factors. Data from the EUROASPIRE IV and V studies indicate low adherence to treatment in accordance with ESC clinical guidelines. To address this issue, integrating pharmacists into primary and secondary healthcare has been proposed. It is essential to study the perspectives of all stakeholders in the treatment process regarding the role of pharmacists in improving adherence to CHD treatment in patients with comorbid conditions.

Purpose. To assess the impact of pharmacists on adherence to CHD treatment in patients with comorbid conditions in Ukraine.

Method: An online survey (n = 999) was conducted using Google Forms, targeting all participants in the treatment process (CHD patients with comorbid conditions, pharmacists, and physicians) from unoccupied territories of Ukraine. The questionnaire included sections on socio-demographic characteristics, treatment adherence, perception of drug properties, and the influence of drug characteristics on selection. Adherence to treatment was assessed using the Morisky-4 scale. The study complied with the Declaration of Helsinki. Statistical analysis was performed using STATISTICA 13 and IBM SPSS Statistics.

Results: Pharmacists' involvement significantly improved adherence to pharmacotherapy, demonstrating a 22-fold increase in treatment adherence among patients who received consultations from both physicians and pharmacists (OR = 22.67, p = 0.000).

All three respondent groups (patients, pharmacists, and physicians) reported that clinical effectiveness was a key factor in drug selection. A significant relationship was found between treatment adherence and the reimbursement program:

Physicians and pharmacists: $\chi^2 = 5.653$, $p = 0.017$
Patients: $\chi^2 = 0.234$, $p = 0.02$
Despite these findings, respondents preferred effective drugs that were not included in the reimbursement program. Patients showed a strong preference for brand-name drugs ($\chi^2 = 0.445$, $p = 0.000$). However, low socioeconomic status was associated with treatment discontinuation once symptoms improved (CI 95% [38.6±0.07], $p < 0.0001$; $\chi^2 = 0.468$, $p = 0.000$).

Conclusion: Low adherence to pharmacotherapy at the secondary care level was confirmed, consistent with findings from the EUROASPIRE IV and V studies. Clinical effectiveness plays a crucial role in adherence to pharmacotherapy among CHD patients with comorbid conditions.
Pharmacists' involvement in CHD secondary prevention was found to be 22 times more effective (OR = 22.67, $p = 0.000$) compared to medical care without pharmacist participation.

Recommendations: Integration of pharmacists into primary and secondary healthcare.

Redistribution of prescriptions/recommendations from brand-name to generic drugs to improve affordability and adherence.

The impact of optimizing pharmacotherapy of coronary heart disease with comorbid conditions on adherence to treatment according to the EUROASPIRE V observational study in Ukraine

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Pharmacotherapy for coronary heart disease (CHD) often involves the simultaneous use of three to ten drugs. It has been established that adherence to treatment significantly influences clinical outcomes. The results of the EUROASPIRE V observational study revealed a low level of treatment adherence among patients with CHD and comorbid conditions across European countries, highlighting the impact of socioeconomic, psychological, and other factors, particularly in Ukraine.

A retrospective analysis of drug prescriptions in CHD patients—assessing drug content, quantity, and interactions (considering the CYP450 system)—is essential for evaluating the impact of polypharmacy on treatment adherence. Purpose. To determine the prevalence of polypharmacy in the pharmacotherapy of CHD with comorbid conditions and its subsequent impact on treatment adherence in the Ukrainian cohort of the EUROASPIRE V study.

Materials and Methods: This study analyzed medical records of CHD patients with comorbid conditions who participated in the EUROASPIRE V observational study in Ukraine. Data were collected over two visits to secondary care physicians across six regional centers in Ukraine.

A total of 445 prescriptions were examined to assess their pharmaceutical composition, metabolism via the CYP450 isoenzyme 3A4 system, and alignment with ESC clinical recommendations regarding target doses. Adherence to treatment was evaluated using the MARS-5 method.

Statistical analysis included: Wilcoxon paired t-test for assessing prescription tablet distribution, adherence levels, and discrepancies between the two visits; Mann-Whitney test to compare adherence levels between adherent and non-adherent groups; Chi-square test (χ^2) to determine the impact of medicines interactions on treatment adherence.

Results: A significant impact of polypharmacy on adherence was identified [U = 4.895; Z = -2.793 (unadjusted); Z = -2.844 (adjusted); $p = 0.0052$ (unadjusted), $p = 0.0045$ (adjusted)], supporting the need for fixed-dose combinations.

A consistent number of drug incompatibilities was observed between the two visits (Z = 1.71; $p = 0.086$), indicating insufficient coordination among doctors, patients, and pharmacists.

Men (55%) showed higher adherence compared to women (45%) ($\chi^2 = 5.734$; dof = 1; $p \approx 0.0167$).

Conclusions: Polypharmacy prevalence was 76.47% (CI 95%: 76.47 ± 0.03; $p < 0.0001$), reflecting the use of complex treatment regimens for CHD with comorbid conditions.

The impact of drug interactions via CYP450 isoenzyme 3A4 was significantly associated with treatment adherence ($\chi^2 = 3.97$; dof = 1; $p = 0.0462$).

The findings highlight the need for fixed-dose drug combinations and improved coordination among healthcare providers to enhance adherence.

Enhancing experiential learning in pharmacy internships: A qualitative analysis of patient consultation training

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Background: Pharmacy internship programs play a critical role in bridging theoretical knowledge with clinical practice. Patient consultation is a key competency, yet interns often

face challenges in effective communication and clinical decision-making. This study employs adult learning principles to analyze qualitative feedback from pharmacy interns, assessing their experiences and exploring the potential integration of artificial intelligence (AI) in training patient interview skills.

Methods: A qualitative analysis was conducted based on structured interviews with pharmacy interns. Data were categorized according to the five core principles of adult learning: self-directed learning, problem-centered learning, experiential learning, intrinsic motivation, and immediate application with feedback. Additionally, the potential advantages and limitations of AI-assisted training were examined in the context of patient communication skill development.

Results: Interns reported significant learning gains through structured guidance, guideline-based case evaluations, and hands-on patient interactions. Key challenges included difficulty in handling unexpected patient responses, time constraints in report preparation, and limited exposure to home care assessments. Social learning from mentors and peers was crucial in skill acquisition. AI-assisted training was identified as a promising supplementary tool, offering real-time feedback, stress-free practice, and reproducibility. However, limitations such as a lack of emotional intelligence, adaptability, and real-world patient dynamics highlight the need for hybrid training models combining AI with standardised patient encounters.

Conclusion: Applying adult learning principles, this study highlights the strengths and gaps in current pharmacy internship training. AI-based simulations hold potential for enhancing communication training but should be integrated with real-world interactions for optimal learning outcomes. Future training models should emphasise structured mentoring, early case selection, and simulation-based learning to improve interns' confidence and competence in patient consultation.

Impact of statin therapy on stroke patients with carotid artery stenosis: A prospective cohort analysis

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Introduction: Stroke is a leading cause of adult disability worldwide. Carotid artery stenosis (CAS) is a manifestation of systemic atherosclerosis, which increases the risk of ischemic stroke and transient ischemic attacks (TIA). Progressive atherosclerosis in the carotid arteries can lead to cerebrovascular events, necessitating aggressive medical management. Statins, as HMG CoA reductase inhibitors, are a key component of cardiovascular risk reduction strategies and are recommended for patients with CAS to prevent stroke recurrence and improve outcomes. This study aimed to evaluate the impact of statin therapy on neurological and clinical outcomes in ischemic stroke patients with and without CAS.

Method: A prospective observational study was conducted over six months (August 2024 – January 2025) at Raju Neuro and Multi-Specialty Hospital. The study included 200 ischemic stroke patients. Data on patient demographics, clinical history, diagnostic methods, comorbidities, risk factors, and medication details were collected. The dosage and potency of statins prescribed were recorded. Clinical and laboratory data were retrieved from medical records and the Kasturba Hospital Management System after obtaining informed consent. Stroke severity was assessed using the NIHSS score at admission and discharge, while the degree of disability was determined using the modified Rankin Scale (mRS) at discharge. Statistical comparisons were performed using the chi-square test, independent t-test, Mann–Whitney U test, and Kruskal-Wallis test as appropriate. The Kaplan-Meier method was used to estimate survival time after the initial event.

Results: The mean age of the study population was 62.26 ± 13.07 years, with a male predominance (66.5%). A significant association was observed between CAS and gender (p=0.003), hypertension (p=0.034), smoking (p=0.025), and statin potency (p=0.037). Statin use after stroke was significantly associated with better neurological improvement during hospitalisation (p=0.048) in both CAS and non-CAS patients. Additionally, statin therapy reduced the risk of stroke recurrence and mortality. High-potency statin therapy (Atorvastatin 40 mg) demonstrated a survival benefit at six months (p=0.032). The defined daily dose (DDD) per 100 bed-days was found to be 49.93 for Atorvastatin and 0.26 for Rosuvastatin.

Conclusion: Statin therapy in ischemic stroke patients, regardless of CAS status, was associated with improved early neurological and clinical outcomes and a lower incidence of stroke recurrence. High-potency statins, particularly Atorvastatin 40 mg, were linked to better six-month survival outcomes. These findings reinforce the importance of statin therapy in secondary stroke prevention and suggest a potential role for high-potency statins in optimising patient prognosis.

Development and impact of a training programme for community pharmacists on therapeutic education supporting patients with endometriosis

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Introduction: Endometriosis is a chronic, inflammatory gynaecological condition that affects approximately 1 to 2 women in 10. It causes chronic pain in 70% of cases and fertility issues in 40% of cases. With an average diagnostic delay of 10 years, this condition has a major impact not only on patients' physical health but also on their psychological well-being, work, social life, and relationships. Endometriosis requires an interdisciplinary approach, and community pharmacists, as first-line healthcare professionals, can play a key role in raising awareness, supporting the diagnostic process, and managing symptoms through complementary therapies such as phytotherapy and lifestyle modifications. However, targeted training is needed to overcome the barriers related to pharmacists' lack of knowledge and confidence in addressing this condition.

Objectives: The primary objective of this study was to develop a training programme for community pharmacists to enhance their ability to support patients with endometriosis, particularly in managing their daily pain. The secondary objective was to assess the impact of this training on pharmacists' engagement, their self-confidence in dealing with the condition, and their overall satisfaction with the programme.

Methodology: The training was based on the principles of therapeutic education aiming to promote patients' autonomy. It was structured around two key components: a theoretical section providing fundamental knowledge about endometriosis and its symptoms and a practical part consisting of case studies to equip pharmacists with the necessary tools to manage these patients, particularly in managing daily pain. This approach enabled pharmacists to engage in secondary prevention by raising public awareness, breaking the taboos surrounding this condition, while also guiding patients toward qualified healthcare professionals. Tertiary prevention was addressed through a focus on therapeutic education. The impact of the training was evaluated with a quantitative study using validated questionnaires administered before and after the training. This survey was conducted in 150 community pharmacies. These questionnaires measured the pharmacists' increased interest and engagement in raising awareness about endometriosis, the improvement in their confidence regarding their knowledge and ability to communicate with patients affected by endometriosis, and their overall satisfaction with the programme.

Results: Data will be collected in June 2025, analysed, and then presented at the conference.

Conclusion: We aim to highlight the engagement of pharmacists in supporting patients with endometriosis. Through the training developed, these professionals will be better prepared to assist patients in managing their symptoms daily and to provide them with the necessary information, thereby reinforcing their essential role in the management of this complex condition. Additionally, trained pharmacists will be better equipped to recognise signs indicative of endometriosis and guide patients toward appropriate medical care, contributing to a reduction in diagnostic delays. This initiative also has the potential to strengthen collaboration between pharmacists and other healthcare professionals, ultimately improving patient outcomes and quality of life.

Blood pressure control in severe pre-eclamptic patients: Evaluating collaborative approaches to patient care and impact on management outcomes in a Hospital in Ghana

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Background: The incidence of pre-eclampsia is rising, contributing to adverse pregnancy outcomes that require coordinated interventions to reduce mortality risks. The expectant (delayed delivery) and interventionist (prompt delivery) strategies are the main management approaches for severe pre-eclamptic patients, often with obstetricians at the forefront of care.

Purpose: To assess the effectiveness of expectant and interventionist management approaches in achieving blood pressure (BP) control among severe pre-eclamptic patients

and also evaluate the impact of pharmacist-obstetrician collaboration in their care.

Method: A prospective study was conducted among 92 severe pre-eclamptic patients, managed by expectant or interventionist approach at the Sunyani Teaching Hospital in Ghana, from January-December, 2024. Patients were assigned randomly into pharmacist-collaborated and non-collaborated groups for antihypertensive therapies. In one group, the pharmacist and obstetrician collaboratively planned, executed and followed up with antihypertensive and other therapies for the patients, but there was no pharmacist involvement in the latter. Blood pressure outcomes were monitored and data was analysed using Stata 17.0. A discharge BP below 140/90 mmHg was considered an optimal outcome. A Chi-square test was used to compare the associations between BP outcomes, pharmacist-obstetrician collaboration and obstetrician only treatment intervention. P-values ≤ 0.05 were considered statistically significant at 95% CI. Ethical approval was granted for the study.

Result: The ages of the 92 study participants ranged from 16 to 44 years. 40.2% (n=37) were managed by the interventionist approach and the remaining 59.8% (n=55), the expectant approach. The mean systolic/diastolic BP on admission for all subjects was 177.95 (±27.86)/114.17 (±18.76) mmHg. 46.7% (n=43) received combination therapy of parenteral hydralazine, oral nifedipine and methyldopa. BP control on discharge of <140/90 mmHg was 64.9% (n=24) vs. 32.7% (n=18) in the interventionist and expectant groups (p=0.002), respectively. Sixty-three percent (n=29) of patients in the pharmacist-collaborated treatment group achieved a targeted discharge BP (p=0.026) compared to 28.3% (n=13) in the non-pharmacist group.

Conclusions: The interventionist management approach was associated with better blood pressure control. Pharmacist-obstetrician collaboration in the care of patients significantly improved blood pressure outcomes in pre-eclampsia. The study highlights trade-offs between optimising maternal health and the neonatal advantage of pregnancy prolongation. Encouraging more clinical pharmacists to build capacity and expand roles in obstetric care promises to be beneficial to maternal health outcomes.

Healthcare professionals' and consumers' awareness and understanding of the Black Triangle Scheme and its influence on adverse drug event reporting in Australia: a mixed-methods study

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Introduction: In pharmacovigilance, it is considered important to report all adverse drug events (ADEs) to regulatory authorities. However, priority is given to several specific ADEs, including ADEs for medicines included in the Black Triangle Scheme. In Australia, the Black Triangle Scheme was introduced by the Therapeutic Goods Administration in 2018 to enhance the reporting of ADEs related to new medicines, or medicines used in new ways. Medicines in this Scheme are subject to additional monitoring as there is less information available for them compared to others. To remind people on the importance of reporting ADEs of these medicines, a black inverted triangle ("▼"), is in their product information. However, there are questions about public and healthcare professionals' (HCPs') awareness of the Scheme and about its effect on ADE reporting practices. Hence, we aimed to evaluate HCPs' and consumers' awareness of the Black Triangle Scheme and its influence on ADE reporting.

Method: A mixed-methods study was conducted consisting of an online questionnaire followed by one-on-one interview with participants who indicated in the questionnaire that they were willing to participate. Participants were HCPs and medicine consumers in Australia recruited via advertisements on social media, in general practices and pharmacies, and through professional and consumer organisations. The questionnaire included questions related to awareness and understanding of the Scheme, and reporting behaviour towards medicines labelled with the black triangle. A semi-structured guide was used during the interviews. Descriptive and qualitative data analyses were conducted.

Results: 405 participants completed the questionnaire (138 HCPs, 267 consumers) of whom 21 participated in the interviews (11 HCPs, 10 consumers). About half of the HCPs (52%) and a tenth of the consumers (10%) were aware of the Scheme, with 63% of the HCPs and 11% of the consumers indicating that they had seen the black triangle. Among those aware of the Scheme (n=93), 42 reported an ADE related to a medicine with a Black Triangle symbol at least once, and 36 indicated they reported an ADE specifically because the medicine was part of the Scheme. After seeing the Black Triangle symbol and its description, 66% (n = 255 of 385) stated they would be very likely or likely to report any ADE associated with a medicine carrying the Black Triangle symbol. Qualitative analysis of the interview transcripts led to four themes: (i) awareness about the Black Triangle Scheme, (ii) noticeability and informativeness of the Black Triangle symbol and its description, (iii) perceived utility of the Scheme, and (iv) influence of the Scheme on future ADE reporting practices.

Conclusion: Awareness of the Black Triangle Scheme seems particularly low among consumers. Once aware, most participants indicated positive views on the Scheme and higher likelihood of reporting. However, issues related to the noticeability and informativeness of the Black Triangle symbol and its description were raised. Enhancing the reach and impact of the Scheme through better designed product information and communications could improve public and professional perceptions of the scheme and raise incidents of ADE reporting in Australia for medicines under its remit.

Exploring the implementation of pharmacist independent prescribing for common clinical conditions within community pharmacy

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Introduction: Different models of prescribing have been implemented around the world, with a paucity of evidence for pharmacist independent prescribing (PIP) in community pharmacy (CP). In the UK in 2006, regulations changed to allow pharmacists to prescribe independently. In November 2020, NHS Scotland launched a new community pharmacy service, NHS Pharmacy First Plus (PFP), whereby PIPs can offer advice and treatment with prescription only medicines where appropriate, for common clinical conditions. To date there is no published evidence relating to this service. The aim of this research was to investigate the implementation of PIP in the context of PFP, using the Normalization Process Theory (NPT).

Method: This qualitative work was part of a mixed methods multi-phase research study. PIPs who had previously completed an online survey, were invited to participate in focus groups or semi-structured interviews. The topic guide and interview schedules were developed using the findings from the earlier survey and the Normalization Process Theory (NPT) with its four constructs of coherence (sense making and understanding of PIP), cognitive participation (how PIP is embedded and sustained in practice), collective action (how PIP is operationalised in practice) and reflexive monitoring (how the embedding of PIP is assessed). The topic guide and interview schedules were 'Think aloud' tested prior to use. 'Four individual interviews, 2 dyadic interviews and one focus group of 3 individuals were undertaken (total 11 participants). Data collection took place using Microsoft Teams®, recordings were transcribed and checked. The Framework Approach was used for thematic analysis, supported by use of NVivo v20®. Coding was carried out by two researchers independently with a third acting as scrutineer.

Results: Generally, participants were positive about PFP, expressing a willingness to continue to offer the service. Within the coherence domain four themes emerged: understanding and confidence with new practices; barriers/facilitators to sustaining PFP; views on perceived impacts; and views on benefits of PFP for patients and in enhancing professional roles. Within the cognitive participation domain two themes emerged: around organising/reorganising of staff to facilitate PFP; and the differing levels of staff engagement experienced with PFP. Within the collective action domain four themes emerged: variations in and complexity of CP workflows; shared reflections on pharmacists' current skillsets and need for new skills and training; concerns about additional work including challenges communicating with general medical practices; and views on policies. Lastly, within the reflexive monitoring domain two themes emerged: disparities in levels of monitoring of PFP between pharmacies; and limited awareness of and engagement with monitoring of PFP prescribing.

Conclusion: The relatively recent introduction of the PFP service is reflected in the predominance of themes linked to sense making and understanding, and operationalising the service in practice. Implementing PFP within an already busy community pharmacy setting is challenging. This research demonstrates a need for increasing focus on how PFP is implemented, considering workforce capacity and skillset and the need for further support and feedback to PIPs.

Promoting confidence and competency in pharmaceutical care practice for pharmacy students and pharmacists in Taiwan through workshops

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Background: Pharmaceutical care is a patient-centered approach proposed by Hepler and Strand in the early 1990s and has been integrated into the US pharmacy curriculum. Despite the transition to a 6-year PharmD curriculum in Taiwan, challenges persist in embedding pharmaceutical care concepts effectively in education and practice. Barriers include limited clinical training opportunities in direct patient care and a lack of structured pharmaceutical care frameworks within university curricula. Taiwan-Overseas Pharmacy Network (TOPharmNet) is a Minnesota-registered 501(c)(3) nonprofit organization in the US, which aims to promote professional networking for Taiwanese individuals in pharmacy professions globally. To increase the understanding of the foundation and process of pharmaceutical care for pharmacy students and pharmacists, TOPharmNet has collaborated with the Taiwan Young Pharmacists Group (TYPG) to host half-day pharmaceutical care workshops since 2024.

Purpose: To enhance the confidence and competence in applying pharmaceutical care practice for pharmacy students and pharmacists in Taiwan through workshops.

Method: The half-day workshop focused on three components: 1) the foundation of pharmaceutical care, 2) the step-by-step process of pharmaceutical care, and 3) case discussion with real-world cases to apply the framework. The didactic lecture provided an overview of the evolution of the US pharmacy profession and key clinical concepts in pharmaceutical care practice, such as philosophy of practice, medication experience, therapeutic relationship, drug therapy problem, and goal of therapy. We adapted team-based learning to facilitate case discussions. Pharmacy continuing education credits were provided by the Taiwan Society of Health-System Pharmacists. We administered an anonymous questionnaire after the workshop to understand the confidence and competency gained by students/young pharmacists and their learning experiences.

Results: Twenty-two pharmacy students/pharmacists participated in the pharmaceutical care workshops in 2024 (n=8) and 2025 (n=14). The overall response rate of the questionnaire was 68%, among which 60% were female (n=9). Of the respondents, 46.7% (n=7) were pharmacy students, 26.7% (n=4) were hospital pharmacists, 20% (n=3) were community pharmacists, and 6.7% (n=1) worked in the pharmaceutical industry. Among the pharmacist respondents, 71.5% had less than 5 year of practice experience (n=5).

Overall, 74% strongly agreed that the workshop helped them understand pharmaceutical care. 80% strongly agreed that the workshop helped them understand the framework of pharmaceutical care and improved their competency in performing pharmaceutical care practices. 93% of participants were very satisfied with the workshop, and all of them would recommend it to other pharmacy students and pharmacists. The most impressive parts of the workshop were the IESC (indication, effectiveness, safety, convenience) tool to evaluate drug therapy problems, the clinical thinking process, and the application of real-world cases for discussion. Participants suggested allowing more time for case discussions as an area for improvement.

Conclusion: The workshop demonstrated a positive learning experience that increased pharmacy students' and pharmacists' confidence and competency in implementing pharmaceutical care practice. Further study and implementation are needed to engage more pharmacy students and pharmacists in pharmaceutical care workshops.

Integration of digital wellness programmes in pharmacies: Addressing blue light exposure and nomophobia

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With the increasing use of digital devices, concerns about excessive screen time, blue light exposure, and nomophobia (fear of being without a mobile device) have grown. These factors contribute to eye strain, sleep disturbances, and digital dependency, negatively impacting overall health. While public awareness of these issues is rising, their integration into pharmacy-led health initiatives remains limited. This paper explores the role of pharmacists in promoting digital wellness and mitigating the risks associated with prolonged digital exposure.

The aim of this study is to propose a conceptual framework for a pharmacy-led digital wellness programme to monitor and mitigate the risks of excessive screen time and blue light exposure. The programme leverages wearable technology, artificial intelligence (AI)-based analytics, and pharmaceutical counselling to enhance patient outcomes and promote healthier digital habits.

This paper presents a theoretical model based on existing literature and best practices, where similar initiatives have been implemented. The proposed framework involves the use of wearable devices (e.g., smartwatches, fitness trackers) to collect real-time data on patients' screen time and blue light exposure. These data would be transmitted to pharmacies through telepharmacy platforms or mobile applications. AI-driven analytics would assess individual risk levels, enabling pharmacists to provide personalised recommendations. In addition to remote consultations, in-pharmacy counselling would play a crucial role, offering tailored interventions such as advice on reducing blue light exposure and its effects, recommendations for protective eyewear and skincare products and guidance for patients on photosensitive medications (e.g., doxycycline) to prevent adverse effects from digital light exposure.

As this study is a conceptual proposal, no empirical data have been collected. However, the model is supported by existing research on digital health interventions and pharmacy-based patient counselling. Future research will involve survey-based studies to assess patient interest and pharmacist readiness for implementing such programmes. Key anticipated outcomes include improved pharmacist-led digital wellness initiatives, increased patient awareness of blue light-related health risks, and enhanced adoption of preventive strategies.

Integrating digital wellness programmes into pharmacies could enhance patient education, adherence to preventive strategies, and overall digital health awareness. By leveraging AI, wearable technology, and pharmacy expertise, pharmacies can play a pivotal role in mitigating the health risks associated with excessive screen exposure. Future studies should focus on pilot implementations and assessing their effectiveness in real-world pharmacy settings.

Preconception care interventions within a community pharmacy setting: A scoping review

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Introduction: It is recognised that having a healthy lifestyle prior to planning a pregnancy, known as preconception health, improves outcomes for both mother and baby. A World Health Organization (WHO) report guides health care professionals and policy makers in developing and implementing preconception care interventions that are effective. There is evidence that primary care-based interventions including brief and intensive education and supplementary medication improve knowledge and reduce risk factors for poor pregnancy outcomes. Community pharmacies are accessible settings, ideally placed to encourage opportunistic discussions of pregnancy planning, such as when an ovulation or pregnancy test kit is bought, or when emergency contraception is supplied. However It is not fully understood, what role community pharmacy can play in such interventions. This scoping review aims to examine, describe and report on the current literature investigating the potential for and actual development and delivery of preconception care interventions within a community pharmacy setting.

Method: This scoping review used the Arksey and O'Malley framework and reported using the Preferred Reporting Items for Systematic Reviews extension for scoping reviews (PRISMA-ScR) checklist. The review team had a doctoral researcher and 5 senior academics providing expertise in review methodology, preconception research and practice. Eligibility criteria were set using the Participants-Concept-Context approach, search databases and terms were defined. Information sources were searched from the inception to July 2024. Following screening, full text review and data extraction a narrative synthesis approach was used to address the review aim. All steps were independently checked by two members of the review team. The Template for Intervention Description and Replication (TIDieR) checklist was used to aid the synthesis process and reporting of evidence, and the Consolidated Framework for Implementation of Research (CFIR) was used to support identification of barriers and facilitators for implementation of the intervention.

Results: From a total 2466 records identified 18 reports remained after removal of duplicates, title / abstract screening and full text review. Three categories of studies were identified; views, perceptions and experiences of pharmacy teams (n=7), preconception interventions delivered by pharmacy teams (n=10) and training resources for pharmacists to deliver preconception care (n=1). Included studies were published between 2002 and 2023, with a majority (n=15) published after 2016 indicating an emerging area of research. Intervention topics included folic acid supplementation, nutrition, smoking cessation, immunisations, oral health, disease and medicine management. Pharmacy teams are motivated and perceive a valuable role in providing preconception health interventions, however remuneration, training and appropriate resources were reported barriers. Women found interventions to be very useful and recognised the need for increased knowledge and awareness.

Conclusion: The small number of included studies indicate that there is a paucity of research in this area and the need for increased efforts to consider this topic further and identify ways to address the challenges for further widespread implementation and uptake of preconception services in community pharmacy.

A pharmacist care pathway intervention for vascular prevention: Protocol for a randomized controlled trial, PRxOACT

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Introduction: Cardiovascular disease (CVD) is the leading cause of death worldwide. CVD risk factors are well-known, but treatment gaps persist. Community pharmacist prescribing to lower CVD risk is supported by trials evidence. We developed an electronic tool ("Care Pathway") for guideline-directed assessment, prescribing & follow-up for CVD risk reduction. The aim of this randomized controlled trial is to determine the impact of a pharmacist-led Care Pathway intervention on participants' estimated risk for major cardiovascular events.

Methods: This trial will include 982 patients (18 years and older) who are at an elevated risk for CVD. We will recruit at least 50% females to ensure a representative sample. Patients will be randomized in a 1:1 ratio to a pharmacist-led intervention which features shared decision-making and is driven by a guideline-based electronic Care Pathway tool or control (usual care). Pharmacist-led intervention will include assessment, education, prescribing medications and follow-up on CVD risk factors. The primary outcome is the difference in change in estimated CV risk from baseline to the 6-month follow-up between the groups. Secondary outcomes include patient satisfaction and quality of life. Analyses will be conducted using intention-to-treat principles and will be stratified by sex.

Conclusion: The PRxOACT Trial will evaluate a unique "Care Pathway" to help pharmacists assess, prescribe, follow-up and document CVD risk reduction. Recruitment is underway and we anticipate results in early 2026. The development of Care Pathways for the management of other conditions including osteoarthritis, diabetes, chronic obstructive pulmonary disease, and influenza-like illness are in progress.

Why do patients stop taking their glucagon-like peptide-1 receptor agonists?

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Introduction: Type 2 diabetes and obesity are among leading causes of morbidity and mortality worldwide. Glucagon-like peptide-1 receptor agonists (GLP-1RAs) are effective for the management of type 2 diabetes and overweight or obesity, but effectiveness of therapy is compromised by high rates of non-persistence. The objective of this study was to examine the reasons for non-persistence to GLP-1 agonist therapy among patients with obesity and/or diabetes.

Methods: A cross-sectional study was conducted at four community pharmacies in Alberta, Canada. Pharmacy dispensing records of GLP-1RAs were screened between January 2023 and June 2024. Adults who were non-persistent to GLP-1RA therapy (defined as a treatment gap of more than 90 days). Eligible patients were invited to participate in a 4-item telephone survey to confirm non-persistence and identify reason(s) for non-persistence. The primary outcome was the patient-reported reason(s) for GLP-1RA non-persistence. Patient-reported reason(s) for non-persistence were transcribed verbatim and coded independently by two authors (patients could report more than one reason).

Results: Among 651 patients assessed for eligibility using pharmacy dispensing records, the presumed non-persistence rate to GLP-1 agonist therapy was 47% (308/651). Of these patients, 91 consented to participate in telephone surveys. In this cohort, the GLP-1RA was prescribed for obesity in 40%, diabetes for 25%, and both obesity and diabetes in 35%. Semaglutide was the GLP-1RA in 89% of cases. Main reasons for non-persistence to GLP-1 agonist therapy included medication shortages (n=24/91; 26%), adverse effects (n=20/91; 22%), medication cost (n=16/91; 18%), perceived ineffectiveness (7%, n=6/91), life circumstances (5%, n=5/91), and changes to lifestyle to manage weight/A1C resulting in the participant to no longer require GLP-1 RA therapy (2%, n=2/91).

Conclusions: About half of patients prescribed GLP-1RAs are non-persistent after 90 days. Patient-reported reasons for stopping their medication included medication shortages, adverse effects, and cost.

Retrospective analysis of LDL change from baseline in patients post acute myocardial infarction

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Introduction: The Acute Myocardial Infarction (AMI) clinic at St. Bartholomew's Hospital (SBH) is a critical piece in the early post myocardial infarction management plan, aiming to enhance long-term outcomes through timely intervention and consistent monitoring. Following an AMI, achieving effective secondary prevention is essential in reducing the risk of recurrent cardiovascular events. One key target in secondary prevention is lowering low-density lipoprotein cholesterol (LDL-C), a well-established modifiable risk factor for adverse cardiovascular events. According to the National Health Service (NHS) guidelines, the goal is to reduce LDL-C by ≥50% and achieve an LDL-C level of ≤1.8mmol/L within 12 weeks post-infarction. The AMI clinic provides individualized care plans, which often involve optimizing statin therapy, to help patients meet these guidelines. As statin therapy plays a pivotal role in achieving these LDL-C targets, understanding the clinic's effectiveness in reaching these goals and the associated outcomes is crucial for improving patient care and informing future treatment protocols. This study aimed to evaluate patients who achieved an LDL-C reduction of ≥50% by the 12-week follow-up appointment. The secondary objectives were the average LDL-C change from baseline, patients who achieved an LDL-C of ≤1.8mmol/L, and patients admitted on statin therapy.

Methods: Data was collected and analysed from October 2020 to June 2024, focusing on LDL-C levels and statin therapy intensity in post-AMI patients. Eligible patients were those who attended their week 1 and week 12 follow-up appointments, with recorded LDL-C levels at both visits. The study assessed the effectiveness of statin therapy in achieving the target LDL-C reduction in line with NHS secondary prevention guidelines. The intensity of statin therapy was categorized based on prescribed doses. This audit was conducted as part of an NHS AMI discharge pathway clinical service evaluation and did not require formal ethics approval.

Results: A total of 277 patients met the inclusion criteria. By week 12, 57% (159) achieved a ≥50% LDL-C reduction from baseline, 42.6% (118) patients that did not meet this goal and had ≤49% LDL-C reduction from baseline. A minority (0.4%) actually had increases in LDL-C over this timeframe. The average LDL-C change from baseline to week 12 was a 45% reduction. The majority of patients 75.5% (209) achieved an LDL-C of ≤1.8mmol/L. For patients admitted on statin therapy, 0.4%, 2.2%, and 10.5% were already established on low, moderate, and high intensity statin therapy respectively.

Conclusions: At the 12-week follow-up appointment, the AMI clinic was successful in helping patients achieve an LDL-C reduction of ≥50% from baseline with more than half of patients reaching this goal and three quarters of patients achieving an LDL-C of ≤1.8mmol/L. All patients who admitted on low or moderate statin therapy were titrated up to the maximum tolerated dose by week 12.

Evaluation of pain management following cardiac surgery in an adult critical care unit in London, England

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Introduction: Effective pain management in the postoperative period is crucial for recovery after cardiac surgery. Various analgesic regimens, including opioid-based medications, patient-controlled analgesia (PCA), and adjunctive non-opioid therapies, are utilized in the critical care unit to manage pain. However, there is considerable variability in these practices, with differences in the choice of PCA drugs, opioid use, and adjunctive analgesics. The aim of this evaluation was to assess the current analgesic practices in a critical care setting, evaluate their efficacy in pain control, and gather patient feedback to optimize pain management protocols and provider education for improved postoperative outcomes. A secondary objective was to identify which if any analgesic regimen demonstrated superior efficacy, considering pain intensity reduction, adverse effect profile, and patient-reported outcomes.

Methods: The study was conducted over a four-week period in June 2024 at St Bartholomew's Hospital in London, England. Observational data were collected in real-time. All data were anonymized and recorded using a secure Microsoft Forms spreadsheet. The data collected included patient demographics (age, sex), surgical procedure type, preoperative renal function, prior analgesic use, and analgesics prescribed during the first 72 hours post-surgery. Analgesic regimens documented included the type and dose of PCA drugs (fentanyl, morphine, oxycodone), as well as the use of adjunctive analgesics like paracetamol. Additionally, pain and nausea scores were recorded, along with PCA adjustments and discontinuation times. Side effects of sedation, nausea, and vomiting were tracked. Patient-reported pain experiences and adverse effects were collected through structured patient interviews. Descriptive statistics were used to summarize the findings and identify patterns in analgesic use and outcomes. This study did not require ethics approval as it was a clinical evaluation.

Results: Data from 57 patients showed that 16 (28%) received fentanyl PCA, 31 (54%) morphine PCA, and 10 (17.5%) oxycodone PCA. Only five patients (8.8%) required a PCA drug change. Fentanyl was associated with lower average pain scores (<1) and fewer nausea incidents compared to morphine and oxycodone. Fentanyl required fewer adjunctive analgesics than oxycodone (33.3% vs. 50%); however, morphine required fewer adjunctive analgesics than fentanyl (26.7% vs 33.3%).

A total of 57 patients met the inclusion criteria and were analysed. Of these, 16 (28%) received fentanyl PCA, 31 (54%) received morphine PCA, and 10 (17.5%) received oxycodone PCA. Only five patients (8.8%) required a change in their PCA drug during the observation period. Fentanyl was associated with the lowest average pain scores (<1) and fewer episodes of nausea compared to both morphine and oxycodone. Additionally, fentanyl patients required fewer adjunctive analgesics (33.3%) compared to oxycodone (50%), while morphine had the fewest adjunctive analgesics required (26.7%).

Conclusion: Opioid-based analgesia remains an effective strategy for managing postoperative pain following cardiac surgery. The current analgesic protocols at the hospital were found to be generally satisfactory in terms of pain control and adverse effects. These findings suggest fentanyl may offer superior pain control with a more favourable side-effect profile compared to other opioid regimens. However, further studies are needed to refine pain management strategies.

Assessment of VTE prophylaxis using hematological parameters upon admission at a cancer care centre in London, England

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Introduction: Venous thromboembolism (VTE) risk assessments are essential for identifying patients at higher risk of developing VTE and minimising bleeding risk in those with lower risk. At St. Bartholomew's Hospital VTE risk assessments are conducted upon admission to the oncology wards. If prophylaxis is indicated, prescriptions for enoxaparin or direct oral anticoagulants (DOACs) should be documented in their chart, with doses administered unless platelet <75 × 109/L or clinicians recommend withholding them for upcoming surgical procedures. Inconsistencies in adherence to standardised protocols have been identified, resulting in some patients receiving inappropriate prophylaxis, while others in need have not been prescribed any, contributing to VTE development. This audit aims to identify current baseline VTE risk assessment documentation and whether patients receive prophylactic doses when clinically appropriate.

Method: A prospective snapshot chart review was conducted using the electronic health record (CRS Millenium). All oncology patients on the 5A, 5B, 5C, 5D, and 6DA wards on Thursday May 20, 2024, were included in data collection. Data collected using a Microsoft Excel spreadsheet included VTE risk assessment results, prophylaxis indications, prescriptions and dosages, reasons for any withheld doses, and platelet counts. Chart notes, drug charts, and lab results found within CRS were utilised for data collection. Data were analysed using descriptive statistics. This audit was conducted as part of an NHS clinical service evaluation and did not require formal ethics approval.

Results: A total of 85 patients were analysed, and 83 (97.6%) had a VTE risk assessment completed. Of these 72 (86.7%) were indicated for VTE prophylaxis and 56 had a prescription in their drug chart for a prophylactic agent. Of the 16 without a prescription in their drug chart despite indicating prophylaxis, 14 had platelets < 75 × 109/L, one needed further review, and one did not have a reason for not being on prophylactic therapy. Of the 56 that had prophylaxis indicated and a prescription in their drug chart, 46 had a prescription for enoxaparin, five for apixaban, two for edoxaban, one for aspirin and mechanical prophylaxis (anti-embolism stockings), and two for mechanical prophylaxis.

Conclusion: In the oncology population at St. Bartholomew's Hospital, there was a lack of adherence to standardised VTE protocols. One patient received inappropriate prophylaxis, and two patients were not given their required prophylactic therapy doses. Data from this project will be utilised and distributed to oncology clinicians to emphasise the importance of following standardised protocols to prevent future VTE and bleeding events.

A study on prescribing patterns, polypharmacy, and antimicrobial stewardship in a tertiary care hospital for optimising medication use in post-operative care

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Introduction: Post-operative care necessitates effective medication management to ensure optimal patient outcomes. However, challenges such as polypharmacy, inappropriate antimicrobial use, and deviations from rational prescribing practices can impact patient safety and healthcare costs. Polypharmacy, commonly observed in surgical patients, increases the risk of adverse drug reactions,

drug interactions, and medication non-adherence. Antimicrobial overuse further contributes to resistance, necessitating antimicrobial stewardship interventions. This study aims to evaluate prescribing patterns, polypharmacy prevalence, and antimicrobial stewardship in a tertiary care hospital to identify areas for improvement and optimise medication use.

Method: A prospective observational study was conducted over six months in the general surgery department of a tertiary care hospital. Data on patient demographics, diagnoses, and prescribed medications were collected from medical records. Prescribing patterns were analysed based on the World Health Organisation (WHO) prescribing indicators, including the average number of drugs per encounter, proportion of generic prescribing, and adherence to the essential medicines list. The extent of polypharmacy was assessed, with polypharmacy defined as the concurrent use of five or more medications. Antimicrobial prescribing practices were reviewed, focusing on antibiotic usage rates, commonly prescribed antibiotics, and adherence to antimicrobial stewardship guidelines. Descriptive statistical methods were used for data analysis.

Results: A total of 286 post-operative patients were included in the study, with an average age of 54.2 years (±13.8). Polypharmacy was prevalent, with patients receiving an average of 9.84 medications per encounter. Antibiotics were prescribed in 100% of cases, with cephalosporins (89.7%) and metronidazole (39.5%) being the most commonly used. The use of fixed-dose combinations was observed in 27.3% of prescriptions. Generic prescribing was notably low, accounting for only 8.17% of total prescriptions. Adherence to the hospital's essential medicines list varied, with deviations observed in 31.6% of prescriptions. A lack of uniform antimicrobial prescribing protocols was identified, highlighting the need for structured antimicrobial stewardship initiatives.

Conclusion: The findings underscore the need for interventions to promote rational prescribing, mitigate polypharmacy risks, and enhance antimicrobial stewardship in post-operative care. The high prevalence of polypharmacy raises concerns regarding medication safety, necessitating strategies to optimise drug use. The widespread empirical use of antibiotics highlights the importance of enforcing antimicrobial stewardship programmes to prevent resistance and ensure appropriate prescribing. Efforts to improve adherence to WHO prescribing indicators, promote generic prescribing, and align prescriptions with essential medicines lists are critical for optimising post-operative medication management. Strengthening antimicrobial stewardship policies and implementing clinical pharmacist-led interventions can contribute to improving prescribing practices and patient safety in surgical care settings.

Migraine management in Lebanon: Assessing economic, clinical, and digital perspectives on patient care and innovation

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Introduction: Migraine care in Lebanon faces substantial challenges amid the ongoing economic crisis. Research remains limited to university populations and lacks comprehensive analysis of treatment patterns, costs, and socioeconomic impacts. This study aims to examine migraine's financial burden, assess patient well-being, analyse treatment cost-effectiveness, investigate medication quality awareness, and evaluate digital health acceptance among Lebanese migraine patients. The combination of medication shortages, rising healthcare costs, and diminished access to care makes this research particularly timely and relevant for healthcare planning in Lebanon.

Method: This cross-sectional study will survey migraine patients across Lebanon using validated instruments including MIDAS, migraine-specific quality measures, EQ-5D-5L, LMAS-14, PHQ-9, and technology acceptance assessments. Data on healthcare costs, productivity losses, treatment efficacy, quality of life, medication quality perceptions, and digital literacy will be collected and analysed through economic modelling and multivariate statistical approaches. The study will recruit participants from diverse geographic regions and socioeconomic backgrounds to ensure representative findings. Both preventive and acute treatment strategies will be evaluated, with particular attention to the impact of medication availability and quality concerns during the economic crisis. The Global Assessment of Migraine Severity scale will provide a standardised measurement of disease burden, while willingness-to-pay assessments will establish economic thresholds for treatment value.

Results: Expected outcomes include comprehensive documentation of migraine's economic impact across socioeconomic groups, insights into relationships between treatment adherence and outcomes during economic hardship, baseline data on digital health readiness, and cost-effectiveness comparisons between antimigraine therapies to inform clinical decision-making in resource-constrained environments. The study will quantify both direct medical costs and indirect productivity losses, identify socioeconomic barriers to effective treatment, and assess patient knowledge regarding counterfeit medications in the context of medication shortages. Results will establish the relationship between migraine frequency, severity, and economic burden, with stratification by socioeconomic status, geographic region, and access to healthcare resources.

Conclusion: This research will address critical gaps in migraine management in Lebanon, providing evidence to inform policy decisions, optimise resource allocation, and develop innovative care models suitable for economic crisis contexts. Findings will contribute to migraine management in similar resource-limited settings globally. Results will support the development of tailored interventions that consider both clinical effectiveness and economic feasibility, with potential applications in digital health innovations to improve migraine care despite resource constraints. By examining the complex relationship between socioeconomic factors, treatment access, medication quality, and health outcomes, this study will provide a foundation for developing resilient migraine care strategies during periods of economic instability. The digital health component will specifically explore affordable technological solutions to enhance patient monitoring, treatment adherence, and access to care in settings where traditional healthcare infrastructure is compromised.

Have antibiotics lost their prescription status? A Qualitative analysis of the supply factors in Community Pharmacies

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Background: Antibiotics are among the most widely prescribed medicines and fall within a well-defined framework for access and supply. Despite existing regulatory systems for antibiotic control, weak regulatory enforcement has led to the non-prescription access from community drug retail outlets and widespread self-medication with antibiotics. Factors such as economic incentives, urbanization, poor regulatory adherence, and the COVID-19 pandemic have further enhanced this over-the-counter demand and supply of antibiotics in Ghana.

Objective: To explore the factors associated with the over-the-counter supply and demand of antibiotics within community pharmacies across Ghana.

Method: The cross-sectional qualitative study employed semi-structured interviews conducted between December 2022 and February 2023. The study population consisted of pharmacy practitioners randomly recruited from the medicine retail outlets situated in rural, peri-urban, and urban communities. The interview questions were structured within the framework of the theory of planned behaviour and investigated participants' attitudes, social norms, and perceived control over antibiotic use. Emerging data was transcribed, coded, and thematically analysed using NVivo.

Results: 23 pharmacy practitioners participated in the study. Economic incentives, customer profiling, digital platforms, online information, sales targets, education, weak regulations, and pandemic-induced fear emerged as key factors influencing the non-prescription distribution of antibiotics. Practitioners demonstrated a good understanding of antibiotics and antimicrobial resistance but exhibited minimal to no awareness of existing national antimicrobial policies, including the National Action Plan on Antimicrobial Resistance.

Conclusion: The over-the-counter demand and supply of antibiotics in Ghana are fuelled by various factors that differ slightly along the lines of community urbanisation and development.

Policy makers, educators, and regulators must take full cognisance of the factors outlined in this study and adopt community tailor-made strategies that target both suppliers and consumers of antibiotics in Ghana. This includes navigating away from a situation of information asymmetry between pharmacy practitioners and clients. Patients/clients must be recognised as full partners in healthcare decision-making and, as such, be eligible for a detailed explanation of rational antibiotic use.

Development and validation of a questionnaire for assessing digital literacy among pharmaceutical specialists

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Introduction: The rapid advancement of digital technologies has significantly transformed the healthcare landscape,

necessitating the development of new digital competencies among pharmaceutical professionals. These competencies are crucial for enhancing patient care, improving operational efficiency, and ensuring regulatory compliance. Therefore, a theoretically grounded and pharmacy profession-focused survey is necessary to accurately assess the digital literacy of pharmacists. This study aims to describe the development of a tool for assessment of digital competencies, drawing on evidence from recent PubMed-indexed studies.

Methods: A thorough literature search was conducted using PubMed, analysing 27 peer-reviewed articles published between 2015 and March 15, 2025, to identify items most relevant to the questionnaire's objective. Articles spanned diverse regions: North America (n=12), Europe (n=8), Asia (n=5), and Africa (n=2), reflecting a global perspective. The search terms included "digital competencies," "skills assessment," "pharmaceutical professionals" and "digital transformation in healthcare." Key findings and insights were extracted from the selected studies.

Results: Methods for assessing digital competencies among pharmaceutical specialists abroad progressed from subjective to more objective and technology-driven approaches between 2015 and 2025, however, questionnaires remain the most popular instruments. Our tool, named "Questionnaire for assessing the level of digital literacy among pharmaceutical specialists", is a structured survey instrument developed to collect quantitative and qualitative data on respondents' knowledge, skills, and attitudes toward digital technologies in their professional roles. The questionnaire is organised into five primary sections: demographic and professional background, general digital literacy assessment, digital knowledge competencies, competencies defining digital skills, and digital attitudes competencies. Each section employs a combination of single-choice questions and scalar response options to capture varying levels of proficiency, awareness, and disposition. The questionnaire employs a self-assessment approach, relying on respondents' subjective evaluations of their digital literacy. The use of closed-ended, single-choice questions facilitates statistical analysis, while the graduated response scales allow for nuanced measurement of proficiency and confidence levels. The survey's design aligns with established framework such as the European Digital Competence Framework (DigComp), by encompassing knowledge, skills, and attitudes as interdependent dimensions of competence. By targeting a specific occupational group, the instrument addresses the intersection of digital competence and domain-specific practice, offering insights into how digitalisation impacts pharmaceutical service delivery. Questions about training needs and organisational support highlight the tool's applied potential for the development of targeted educational programs or management policy.

Conclusion: The digital transformation of the pharmaceutical industry requires robust digital competencies among professionals. Effective assessment tools and training programs are essential to ensure these professionals are equipped to meet the challenges of the digital age. By addressing the current gaps in digital skills and fostering a culture of continuous learning, the pharmaceutical industry can leverage digital technologies to enhance patient care and drive innovation.

Iterative design of a pharmacy simulation tool for enhancing licensing exam readiness in Russia: Insights from beta-testing

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Introduction: The pharmacy simulator game enables the simulation of real-world patient counselling scenarios in a pharmacy setting and facilitates the study of pharmaceutical professionals' action algorithms, aligned with the "Pharmacist" professional standard and current regulatory framework. The use of interactive simulation games helps tailor education to the cognitive needs while enhancing the quality of pharmaceutical training.

Objectives: This study aimed to develop a computer simulation game for practising pharmaceutical patient counselling skills in a pharmacy environment and to collect student feedback on its efficacy.

Methods: To create the game, a custom JavaScript parser was developed to process JSON (JavaScript Object Notation) files. Graphic design tools such as Adobe Photoshop, Midjourney and Figma were employed for character drawing, background artwork and interface development. Artificial intelligence (AI) assisted in optimising visual elements. Dialogues were based on scenarios from the 2024 Pharmaceutical Counselling Station Passport, which are used to assess pharmaceutical specialists' readiness for professional activity at the second stage of the Pharmacy License Exam. The survey was conducted via Google Forms.

Results: The simulation game "PharmStory" was developed, featuring 10 interactive dialogues between a pharmacists and patients seeking medication advice and purchasing necessary medications (with or without a doctor`s prescription). A survey was conducted with 120 graduates of universities of Russia, including interns at large international pharmaceutical companies (60% female, 40% male; average age of respondents - 23 years).

Key findings include: 70.8% preferred a combined (game-based and traditional) approach, 24.2% favoured a fully game-based approach, and the remainder chose traditional teaching methods. The majority of respondents (61.7%) believed gamification could become a primary educational tool, while 38.3% felt it could not completely replace traditional learning methods. One of the results of the study was the identification of a high user satisfaction: 94.2%

supported integrating this format into standard curricula. The respondents were also asked to rate the game "PharmStory" on a 5-point scale based on different indicators. The game evaluation results are presented below. Mastery of Algorithms: 65% (75 respondents) rated effectiveness at 5/5 (5 is highest). Interface Usability: 56.7% awarded 5/5, and 36.7% gave 4/5. Pharmacy Licensing Exam Preperation: 65% rated motivation improvement as 5/5, 29.2% as 4/5. About 57 % reported no technical issues, while others noted slow loading (18,3 %), display errors (21.7%), incorrect scaling (14.2%) and level completion errors (4.2%). The preferred features are the correct-answer color indicators (68%), built-in medication hints (67.5%), Graphic design/animations (56.7%), scenarios and characters (50%), time limits - (29.2%), points system (20%). Survey participants suggested improvements to the simulation game: add educational articles (87.5%), include awards and virtual achievements (48.3%), voice-over dialogues (45%), player competitions (42%), personalized avatars (40%), level progression (30%).

Conclusions: The «PharmStory» simulation game demonstrates the potential of gamification in training pharmacy students for the Pharmacy License exam in Russia and real-world professional practice. Beta test results highlight gamification`s growing role in Russian education. While gamification cannot fully replace methods of education, it serves as a valuable supplementary tool to improve engagement and skill retention.

The evolution of pharmaceutical services in Brazil and the role of technological platforms in the standardisation, compliance, recording, and traceability of data

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Background: The transformation of pharmaceutical services in Brazil has been driven by professional regulations such as CFF Resolutions no. 585 and 586/2013, which recognise pharmacists' clinical responsibilities, as well as sanitary regulations including Anvisa RDCs no. 44/2009, 197/2017 and 786/2023, which established standards for the operation of pharmaceutical services in pharmacies, including vaccine administration and rapid diagnostic testing. Another important milestone was the enactment of Law 13.021/2014, recognising pharmacies as healthcare establishments. Technological platforms play a central role in the standardisation, compliance, recording and traceability of pharmaceutical services, ensuring clinical data security and integration into the patient journey. The Clinicarx Platform by Interplayers is the largest and most widely used pharmaceutical services platform in Brazil, operating as both a services platform and supervisory laboratory, and serving as a digital ecosystem for the delivery of clinical services in pharmacies and pharmaceutical clinics. Over its eight years of operation, Clinicarx has reached over 12,000 pharmacies and supporting the standardisation and monitoring of over 100 distinct health services and procedures.

Objective: To analyse the evolution of pharmaceutical services in Brazil and the role of technological platforms in managing clinical data.

Method: The analysis is based on data extracted from the Clinicarx Annual CRX Report 2024, which presents comparative indicators between 2024 and 2023 on the evolution of key pharmaceutical services recorded through the platform, including rapid tests, vaccination, consultations and pharmaceutical prescribing. The Clinicarx Platform, by Interplayers, ensures the technological and regulatory infrastructure for clinical services across a national network of pharmacies and clinics, representing a comprehensive sample of the Brazilian retail pharmacy sector.

Results: Clinicarx registers and monitors more than 100 pharmaceutical services and procedures. According to its data lake, pharmaceutical services have grown significantly over the years. In 2023, Clinicarx recorded 10.9 million services, while in 2024 this number exceeded 14 million, representing a 28% increase.

Among the most requested services, rapid diagnostic testing showed substantial growth. In 2024, dengue testing was a key highlight, with over 570,000 tests performed and a 24% positivity rate, representing a 41% increase compared to 2023.

Vaccination services also saw notable growth. In 2023, 250,000 doses were recorded on the platform, rising to over 350,000 in 2024, a 40% increase. The most administered vaccines include Influenza, Herpes Zoster and Meningococcal B.

Pharmaceutical consultations and prescribing followed a similar upward trend, reaching 1.1 million records in 2024, a 37% increase compared to 2023. During the COVID-19 pandemic, pharmacies conducted over 21 million rapid tests, with 23% positive results

Conclusion: The evolution of pharmaceutical services in Brazil strengthens the integration of pharmacies within the healthcare system. Technology is essential for ensuring service quality, traceability and patient safety. The consistent growth of clinical services consolidates the pharmacist's role as a key healthcare provider.

A country with over 220 million inhabitants the territorial capillarity of pharmacies represents a unique opportunity for healthcare delivery at scale. Strengthening these services enables wider care coverage, contributes to early diagnosis, and offers accessible and efficient solutions for millions of Brazilians.

Analysis of pharmaceutical market in Ukraine: retail sales in last half a decade

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Objectives: Pharmaceuticals are among vital group of goods after the food products. In Ukraine where the war has been going on for 28 months its important to understand and explain basics tendencies of pharmaceutical market development / decline. The final objective was to carry out structural retrospective analysis of medicines' retail sales in Ukraine for the last 5 years to compare data before/after COVID-19 and before/after war.

Methods: Data were delivered from ProximaReseach Group data base and were analysed both in monetary and natural (pcs) units by next parameters: general retail sales, OTC/Rx parameter, country of origin and imported/domestic medicines, by 4th and 5th levels of ATC (anatomical therapeutical chemical) classification and by brand name parameter. Time period: Jan. 2019 to Jan.2024.

Results: 4904 brand names for 61 time periods (month) by given structure have been analysed. In 01.2024 total retail sales consist of almost 330 mln. $ USA (329.608.583) that was +20% more compared to 01.2019 and -28 % less to 02.2022 (month when the war has begun). In natural terms retail sales in 01.2024 were 34,3% lower compared to 01-2019 and more than 45% lower to 02.2022. Similar trends have been persisted for the results of analysis by OTC/Rx and domestic / foreign parameters. During all analysing period it was domination of domestic's medicines share with the gradual growth of the share of imported medicines to 2024. Among the countries of origin Germany, Switzerland and Slovenia were on the top list. It was presented 593 4th level ATC groups during analysed period.

Conclusions: Despite the great upheavals pharmaceutical market in Ukraine in context of retail sales shows gradually development, however it did not reach the pre-war volumes for objective reasons.

Developing outcome-based performance indicators for professional pharmacy services: A qualitative study

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Background: The performance measurement of professional pharmacy services has traditionally relied on output-based indicators rather than outcome-based indicators. While output-based indicators are easier to measure and track, they fail to directly assess the impact of these services on patient health outcomes. Literature highlights the need to adopt outcome-based indicators to better assess pharmacy service value and effectiveness. The study aims to assess expectations, concerns, and potential barriers related to the design, implementation and use of health status outcome-based indicators to inform the design of a pharmacy services' dashboard, ensuring the alignment with real-world needs and practices.

Method: Structured interviews were conducted with pharmacists who are owners, technical directors, or professional services managers, following the CFIR 2.0 framework. This framework organizes constructs into five domains - inner setting, innovation, outer setting, individual skills, and implementation process - enabling systematic analysis. Interviews were held individually, in person or remotely, recorded, and transcribed for content analysis using QualCoder 3.5. A snowball sampling method was used, with each respondent suggesting 2–3 pharmacists. Interviews continued until saturation.

Results: Respondents (n=12) were on average 48 years old, with 62% being female. Additionally, 62% held a master's degree and had been practicing for over 10 years in pharmacies mostly located in the Lisbon region and southern Portugal (77%). Preliminary results regarding the inner setting revealed that respondents identified the professional services provided and the need for relevant health outcome indicators for performance monitoring. They also described how these elements align with pharmacy's mission and values, as well as the perceived priority of implementing such a tool. The findings further characterize the pharmacy team's openness to innovation, the structural requirements for implementing a professional services dashboard, the importance of both internal and external communication, and potential incentives that could support its adoption and sustained use. Concerning the individuals' skills, most of the interviewees showed a willingness to adopt this tool and mentioned the main skills for its use and implementation: technical skills to provide services, technological skills, and management skills to critically analyze the indicators and make informed decisions were the most mentioned. The

main reasons for adopting this tool are related to professional differentiation, improved economic return, team and patient satisfaction and increased quality of services. When exploring key innovation features, respondents highlighted the benefits of tracking health outcomes and using indicators for pharmacy services. Main drawbacks included lack of record-keeping culture, time constraints, staffing, and services' low remuneration. The study also assessed daily operational impacts. External factors influencing implementation and supportive or obstructive organizations, potential funding sources, and strategic partnerships were equally identified. Lastly, key strategies for successfully integrating a health outcome performance dashboard in a broader context were outlined. To build on these preliminary insights, we will continue with the interviews, aiming to validate and expand these findings across different pharmacy settings and regions.

Conclusion: Using this framework in pre-implementation ensures a dynamic, iterative and adaptable process aligned with innovation development. It grounds health outcome indicators and performance dashboard in real-world practice, reflecting pharmacists' perspectives.

Exploring the integration of a digital medication dispenser in community pharmacies: A qualitative study with Portuguese pharmacists

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Introduction: Improving medication adherence in patients with chronic multimorbidity remains a priority in community healthcare. Despite the availability of dose administration aids (DAAs), traditional systems often lack digital tracking and real-time communication features. The MobiMAd@PT project introduces Mobili®, an automated and portable medication dispenser, to community pharmacies in Portugal. Understanding pharmacists' perceptions and readiness to integrate such technology is essential for effective implementation. This study aims to explore community pharmacists' experiences and expectations regarding the use of Mobili®, focusing on perceived benefits, usability, workflow integration, and potential barriers to adoption.

Method: A series of four sequential focus groups will be conducted with pharmacists participating in the pilot implementation of Mobili®. Sessions are scheduled for: Pre-training (baseline), Post-training, Mid-intervention (after 1–1.5 months of patient use), and Post-intervention. The discussion guide is structured around the Consolidated Framework for Implementation Research (CFIR 2.0). Topics include intervention characteristics, perceived fit with current practice, patient-pharmacist interaction, and digital integration. All sessions will be audio-recorded, transcribed verbatim, and analyzed thematically using QualCoder 3.5. A hybrid inductive-deductive coding strategy will be applied to allow both emergent themes and structured CFIR mapping. Member checking and field notes will enhance the trustworthiness of findings.

Results: We anticipate identifying a range of themes, including:
- High interest in digital tools that support patient adherence and reduce manual follow-up.
- Concerns about workflow disruption, time allocation, and technical troubleshooting.
- Importance of pharmacist training and patient education for effective use.
- Differences in perception between early expectations and post-intervention insights.

Findings will inform system refinement, pharmacist training, and broader implementation planning.

Conclusion: Pharmacists are key stakeholders in the successful adoption of digital health technologies like Mobili®. This qualitative study will offer critical insight into their experiences, concerns, and suggestions for optimizing integration into pharmacy workflows. These results will directly contribute to the development of tailored implementation strategies for Mobili® in community settings, supporting better adherence and chronic disease management.

An analysis of delirium and its management in post cardiac surgery patients in an acute critical care unit

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Introduction: Delirium is a common and serious complication following cardiac surgery, associated with longer hospital stays, increased morbidity, and worse long-term outcomes. The management of delirium in post-cardiac surgery patients requires standardised protocols to optimise patient care and improve recovery. At St. Bartholomew's Hospital in London,

England, the Acute Critical Care Unit (ACCU) currently follows a protocol to identify and manage delirium, but the effectiveness of these practices has not been fully evaluated. The primary objectives of this service evaluation were to determine the incidence of delirium among post-cardiac surgery patients using the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) and its duration of positivity. Secondary objectives included evaluating whether CAM-ICU assessments were completed consistently (once per nursing shift) and assessing the types of delirium treatment regimens administered. Additionally, the evaluation sought to measure the time to step-down from the ACCU.

Methods: This prospective observational service evaluation was conducted over a three week period (July 22nd – August 9th, 2024) where data were collected daily (Monday – Friday). Data were collected on all patients admitted to the ACCU following cardiac surgery during this period. The data collected included the hospital number, critical care admission date and time, ward location, patient weight, preoperative use of antipsychotics or multiple antidepressants, details of the surgical procedure, drug name and doses of delirium management medications, frequency and completion of CAM-ICU assessments which evaluates acute mental status changes or a fluctuating course (feature 1), inattention (feature 2), altered level of consciousness (feature 3) and disorganised thinking (feature 4) with a positive score coming from the presence of feature 1 and 2 and 3 or 4. In addition, documentation of a delirium diagnosis was recorded. Patients were monitored for up to 5 days post-operatively in the ACCU unless they were discharged earlier. Descriptive statistics were used to evaluate the overall incidence of CAM-ICU assessment score and consistency of evaluation along with medication usage. This evaluation did not require ethics approval.

Results: A total of 44 patients met the inclusion criteria. No patients tested CAM-ICU positive; 70.5% (n=31) were negative while 30% (n=13) were not able to be assessed. Patients were unable to be assessed due to sedation and language barriers. The majority of patients 81.8% (n=36) had a CAM-ICU assessment completed at least once per shift. There were only four patients who received delirium related medications and all received dexmedetomidine, for agitation management. For the patients in this evaluation, 70.5% (n=31) were discharged from ACCU within two days of their admission.

Conclusion: The use of the CAM-ICU assessment was implemented appropriately during this evaluation period and there were no patients identified as positive. However, there was a group of patients who were unable to be assessed, which identified a barrier for the current protocol implementation and opportunities for future changes to increase appropriate use for all patients. Additional evaluation should be conducted for a longer time period (including weekends) and could include documentation of non-pharmacologic options for delirium.

Analysis of icosapent ethyl eligibility in post acute myocardial infarction patients

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Introduction: At St. Bartholomew's Hospital (SBH) acute myocardial infarction (AMI) clinic, pharmacists follow-up with post-AMI patients to optimise secondary prevention medications. Blood pressure, heart rate, and laboratory results are monitored, and medications are titrated in accordance with the National Institute for Health and Care Excellence (NICE) guidelines. Icosapent ethyl has demonstrated triglyceride level reduction on stable statin doses and protection against cardiovascular events. The aim of this study was to evaluate patient eligibility for icosapent ethyl at the 12-week appointment, including patients meeting partial criteria.

Method: This retrospective cohort study evaluated all patients within the AMI clinic who had documented low-density lipoprotein (LDL) and triglyceride levels available at their 12-week appointment from March 2021 to March 2024. These levels were then used to identify which patients met criteria for using icosapent ethyl at their appointment. Patients are eligible for this treatment if they have established cardiovascular disease, fasting triglycerides of 1.7mmol/liter or higher, LDL levels greater than 1.04mmol/liter and less than or equal to 2.60mmol/liter, and if they are established on statin therapy. Descriptive statistics were used. This study did not require ethics approval.

Results: A total of 307 patients met the inclusion criteria. Of the included patients, 77% had an LDL level that met icosapent ethyl use criteria, 34% had triglyceride levels that met the criteria, 22% met the criteria for use for both laboratory values, and 21% of patients were eligible to take icosapent ethyl. The one patient difference, from meeting both laboratory criteria to being eligible, was attributed to statin intolerance.

Conclusions: The AMI clinic was able to determine eligibility for icosapent ethyl for nearly a quarter of the patients during this evaluation period. The results demonstrate a significant number of AMI clinic patients would be candidates for icosapent ethyl. Next steps include establishing a protocol for clinical pharmacist prescribing and monitoring of icosapent ethyl within the SBH AMI clinic.

Interdisciplinary role profile development of hospital pharmacists: A theory informed focus group pilot study

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Background: The role profile of hospital pharmacists is not clearly defined in every country, which leads to a slower role profile development of pharmacists compared to other healthcare professionals.

Purpose: This study aims to use behavioural theory informed focus groups with hospital physicians and pharmacists to identify perceived capabilities, motivations and opportunities to optimise the interdisciplinary role profile of hospital pharmacists within the hospital setting.

Method: A qualitative focus group study involving hospital physicians and pharmacists from Switzerland was conducted. Using study materials and semi-structured questions based on the COM-B and Theoretical Domains Framework (TDF), the study received ethical approval from the University of Innsbruck (Certificate 90/2024). Two online focus groups, including five physicians or five hospital pharmacists were conducted. Sessions held via Zoom (v. 6.2.11) were recorded and transcribed verbatim. Framework analysis based on COM-B + TDF domains coded independently by two researchers and further analysis was conducted using the Johari window. Results adhered to the COREQ guidelines for qualitative research reporting.

Results: Capability
Hospital physicians were aware of hospital pharmacists' capabilities, although hospital pharmacists were not aware of the extent physicians appreciate them. Hospital physicians expressed that they value hospital pharmacists' role for advising and recommending appropriate medication for patients, especially in light of the overwhelming number of medications. Nevertheless, hospital pharmacists were concerned that they were not taken seriously.

Opportunity
Physicians believed that the opportunity to have a hospital pharmacist as part of their interdisciplinary team helps to improve patient safety and quality of care, as well as reducing their workload. Consequently, hospital physicians wished for a hospital pharmacist to become part of their interdisciplinary team and to extend their professional role, although the lack of financial resources and staffing problems might be rate limiting. Participants believed that reimbursement of services would be appropriate to emphasise the significance of the pharmacists' role. Both groups wished to meet earlier in their career (starting at undergraduate level) to better understand the different decision-making thought processes. Physicians requested that access to information provided by a hospital pharmacist is more easily accessible and both groups stated that they would prefer personal communication over emails or electronic notes.

Motivation
Hospital pharmacists and physicians expressed that their biggest motivation to work together is to make a difference in patients' lives, as they aim to ensure the best patient care.

Conclusion: Behaviour theory analysis helped to demonstrate the value placed on hospital pharmacists by hospital physicians and their support for pharmacists' role to develop in daily practice. Defined reimbursement strategies and the motivation of participants to improve patient safety are strong facilitators for hospital pharmacists to have a more significant role. Hospital pharmacists would benefit from having a more precisely defined role profile in order to accelerate the future development of their interprofessional role.

Improving experiences of transgender people within community pharmacies in the United Kingdom

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Background: Transgender individuals often face disparities in accessing healthcare services, including within community pharmacies. As one of the most accessible healthcare settings, pharmacies have the potential to provide inclusive care, yet research on transgender individuals' experiences within this setting is limited. This study examines these experiences, identifying barriers and opportunities for improvement to ensure equitable pharmacy services.

Objectives:
1.To explore transgender individuals' experiences of interactions with community pharmacy staff.
2.To assess the prevalence and nature of transphobia in community pharmacies.
3.To identify opportunities for improving pharmacy services to better support transgender individuals.

Methods: A qualitative study using purposive sampling was conducted utilising semi-structured, one-on-one interviews with transgender individuals aged 18 and older who had accessed community pharmacy services. Interviews captured

in-depth insights into participants' experiences, including both positive and negative interactions. A thematic analysis was performed to identify key themes.

Findings: Analysis of the interview data revealed four key themes regarding transgender individuals' experiences with community pharmacy. Access to healthcare services emerged as a significant concern, with many participants expressing a preference for private healthcare due to its specialized care and greater understanding of transgender-specific needs. Other than collecting medication, some interviewees did not expect staff to be able to help them due to lack of knowledge about trans-specific healthcare.

Interactions with healthcare professionals varied considerably. While some pharmacy staff demonstrated knowledge and support, others lacked awareness of transgender healthcare needs. Younger pharmacy professionals tended to be more understanding, whereas reception and counter staff often contributed to negative experiences through misgendering and uninformed interactions.

The emotional and psychological impact of these experiences was profound. Many participants described feeling excluded or "othered" by healthcare professionals, with the repeated need to educate pharmacy staff adding to their emotional burden. However, positive interactions—where staff displayed understanding and respect—significantly improved their overall well-being and trust in pharmacy staff. Participants emphasised the importance of inclusive and respectful communication, particularly the correct use of pronouns and prefixes. Lack of mandatory transgender healthcare training for pharmacy staff appeared to contribute to inconsistent experiences, with participants suggesting that a standardised approach to this would be beneficial. Policy changes to implement inclusive pharmacy practices are essential steps towards improving transgender individuals' experiences within community pharmacies.

Implications: Findings suggest a need for targeted pharmacy training on transgender healthcare, integrated into MPharm curricula and continuing professional development. A structured competency framework could standardise best practices for current pharmacy staff, ensuring inclusive and equitable care. Community pharmacies, as frontline healthcare providers, are uniquely positioned to bridge gaps in transgender healthcare, but achieving this requires systemic changes in training, policy, and practice.

Conclusion: While community pharmacies offer accessible healthcare, transgender individuals continue to face barriers that impact their well-being. Addressing knowledge gaps, implementing standardised training, and fostering inclusive practices could significantly improve pharmacy experiences for transgender individuals. These findings underscore the urgent need for education reform and policy enhancements to create a more equitable healthcare environment.

Impact of improvement plan on pharmacy grading outcomes: A risk-based approach to pharmacy inspections in South Africa

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Background: The South African Pharmacy Council (SAPC) implemented an improvement plan for pharmacy inspection reports in 2020 as part of a risk-based approach (RBA) to pharmacy inspections. A pharmacy improvement plan is created by a pharmacy detailing specific measures that the pharmacy will take to rectify all identified shortcomings following an inspection report. The plans outline how the pharmacy will address compliance issues with good pharmacy practice standards, including patient safety and medical quality.

Purpose: This study investigates the influence of the improvement plans presented by the responsible pharmacists (RP) on potential changes in the grading status of B- and C-grade pharmacies.

Methods: A cross-sectional research design was employed to evaluate the influence of the improvement plans developed after the inspection of 3,596 pharmacies from 1 January 2020 to 28 February 2025, which led to a B (n = 423, 11.8%) and C (n = 3173, 88.2%) grade. A specific pharmacy could be inspected more than once during the study period. The data were analysed using SAS 9.4 (TSIM3) (SAS/STAT software, Version 14.1 for Windows 6) software to generate descriptive (such as frequencies) and inferential statistics (Chi squared (χ^2) test). Two-tailed statistical tests were performed with a type-I error rate set at 5% (α=0.05). Cramer's V was calculated to assess effect size, indicating practical associations: Non-significant association ≤ 0.1; Visible association >0.1 and ≤ 0.3; Significant association ≥ 0.5.

Results: A practically significant association (p=0.0001; Cramers' V = 0.6) was found between the grade obtained during the inspection, which led to the improvement plan, and the grade achieved with the following inspections. The grading status of most B-grade pharmacies (n=237; 58%) improved to an A-grade in subsequent inspections after they submitted improvement plans. Only 49 (12%) pharmacies' grading status deteriorated. The results indicated that 1100 (35%) and 47 (2%) C-grade pharmacies' grading status improved to an A- or B-grade, respectively. Most C-grade pharmacies (n=1805; 57%) stayed a C-grade after the subsequent inspection. These also included those who had not yet been re-inspected.

The results indicated that the SAPC approved most (n=314; 74%) improvement plans developed for B-grade (N=423) compared to 35% (n=1113) for C-grade (N=3173) pharmacies (p=0.0001; Cramer's V=0.3). The improvement plans of 1014 (32%) C-grade pharmacies were referred to the Practice Committee of the SAPC for further evaluation. Overall, 10% (n=352) of RP did not submit an improvement plan.

Approximately 4% of problems identified were related to nonfulfillment with non-negotiable questions and 96% with specific sections in the inspection questionnaire. Of these, 59% of cases were associated with unavailability of written standard operating procedures (26%), prescription dispensing (11%), nonexistence of specific reference material (10%), lack of pharmacy (6%), and registration details (6%). Most of these problems were identified during monitoring (71%) and new premises (17%) inspections in community (84%) and institutional (11%) pharmacies.

Conclusions: The results demonstrate the usefulness of an improvement action plan. The responsible pharmacist can utilise the improvement action plan as a tool to improve the grading outcome.

Epilepsy management in Lebanon: Exploring economic burden, quality of life, and cost-effectiveness in the context of socioeconomic challenges

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Introduction: Epilepsy management in Lebanon faces significant challenges amid the country's ongoing economic crisis, with limited research integrating pharmacoeconomic evaluations, medication quality awareness, and patient-reported outcomes. Existing studies suffer from geographical limitations, small sample sizes, and insufficient exploration of socioeconomic disparities affecting treatment. This study aims to comprehensively analyse the economic burden of epilepsy, assess quality of life metrics, evaluate treatment cost-effectiveness, and examine patient awareness regarding medication quality in Lebanon.

Methods: A cross-sectional survey-based study will be conducted across all Lebanese regions, collecting data from epilepsy patients using validated instruments including the Lebanese Medication Adherence Scale (LMAS-14), Quality of Life in Epilepsy (QOLIE-10-P), EuroQol-5 Dimensions-5 Levels (EQ-5D-5L), ICEpop CAPability measure for Adults (ICECAP-A), Liverpool Adverse Effect Profile (LAEP), and the Patient Health Questionnaire (PHQ-9). The study will assess direct and indirect costs of epilepsy, analyse treatment efficacy, evaluate medication quality awareness, and examine willingness-to-pay for effective treatments. Data analysis will include cost-of-illness calculations, quality-adjusted life-year estimations, and assessment of socioeconomic determinants of treatment outcomes.

Results: The anticipated results will provide the first comprehensive nationwide data on epilepsy's economic impact in Lebanon, quantifying both direct healthcare costs and indirect costs including productivity losses. The study will document quality of life metrics across socioeconomic levels, compare cost-effectiveness among antiepileptic drug regimens, and assess patient knowledge and attitudes towards medication quality. Results will establish the relationship between Lebanon's economic crisis and epilepsy treatment challenges, including medication adherence patterns and barriers to optimal care.

Conclusion: This research will address critical gaps in epilepsy management in Lebanon by providing essential data on economic burden, quality of life determinants, treatment cost-effectiveness, and medication quality awareness. Findings will inform evidence-based healthcare policy decisions, guide resource allocation, and promote interventions that improve epilepsy care in resource-constrained settings. This comprehensive approach will contribute to the global understanding of epilepsy management during socioeconomic crises.

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CONFERENCE ABSTRACTS

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Oral presentations

Exploring the development and implementation of practice-based interprofessional education for student pharmacists in Scotland: A case study

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Introduction: Interprofessional collaborative practice (IPCP) is considered essential to address the increasingly complex needs of patients. Subsequently, developing a workforce with the right competencies is a requisite to ensure safe, effective and efficient person-centred care within healthcare systems. This in turn has increased focus on interprofessional education (IPE) as a necessary step in preparing a "collaborative practice-ready" workforce. The overarching aim of this research programme was to explore the development and implementation of practice-based IPE in the experiential learning (EL) curriculum of Master of Pharmacy (MPharm) programmes in Scotland. Ethical approval was granted by the School of Pharmacy and Life Sciences Ethics Review Committee at Robert Gordon University.

Method: The research adopted a pragmatic worldview and included four empirical studies conducted over two phases. A case study research strategy allowed an in-depth exploration; a multimodal approach was employed. The decision to underpin the programme of research with systems theory encapsulated the complexity of IPE and allowed consideration of multiple presage, process and product factors within the teaching and learning environment. Phase 1 (analysis) included three studies and involved key stakeholder groups, allowing diverse views and experiences to be explored. Multiple methodologies were used - quantitative (cross-sectional online/paper questionnaires), qualitative (document analysis) and mixed methods (cross-sectional online questionnaire and group interviews). Phase 2 (design) used a consensus method (modified Delphi) to design a framework to support the development and implementation of IPE initiatives. Statement development was informed by key findings from Phase 1 and a document analysis of international IPE frameworks. A heterogenous expert panel with 45 members from key stakeholder groups was appointed.

Results: Key findings from Phase 1 built a picture of what is happening during placements. Overall, stakeholders perceived IPE as essential to prepare student pharmacists for future IPCP and improve patient outcomes; however, they reported a lack of visibility of IPE in the EL curriculum. Phase 2 focused on moving forward with IPE curricular design. The designed framework developed from consensus to statements, includes multiple aspects for consideration when moving forward with the development and implementation of IPE in the EL curriculum. Presage factors focus on establishing a clear understanding among all key stakeholders of what constitutes practice-based IPE and the importance of facilitator training programmes and student pre-placement

preparation. Process factors highlight the need for modifications to build on current interprofessional learning (IPL) experiences during placements; through the development of suitable resources. In addition, it highlights the need to move away from reliance on ad hoc or informal IPE through the development of formal practice-based IPE opportunities in the EL curriculum; focusing on a continuum of learning. Product factors clearly present the collaborative competencies that student pharmacists should develop as part of their IPL.

Conclusion: This research has produced original findings; identifying challenges but also opportunities. It has provided a strong foundation to drive the agenda forward to deliver equitable IPE experiences in the endeavour to produce collaborative practice-ready graduates; whose practice can achieve the best patient and organisational outcomes.

Pharmacy practice and first people health equity: A scoping review

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Background: First Peoples essence and cultures are evolving and thriving in many parts of the world despite the continuing negative impacts on health of social and structural determinants. First Peoples health inequity is observed globally though, in higher rates of chronic disease compared to non-First Peoples. Pharmacy practice is an essential component of chronic disease management, with the majority of people needing medication for life; achieving a good health-related quality of life and the best clinical outcomes requires optimal medication therapy and pharmaceutical care. Pharmacists are recognized by the World Health Organization (WHO) as having a leadership role in healthcare systems; with pharmacists cited as being well placed to lead the transformation and change required to address health inequities. This scoping review identified pharmacy practice strategies and interventions, across the globe, contributing to achieving First Peoples health equity including reported outcomes and impact. Identified strategies and interventions were mapped to a contemporary framework and along with implementation barriers/enablers this highlights practice gaps; this scoping review significantly increases the professions understanding of how pharmacy practice is currently contributing to achieving First Peoples health equity and provides future signposting.

Method: The review followed PRISMA-ScR for reporting and the protocol is published with JBI Evidence Synthesis; Embase (Elsevier), MEDLINE (Ovid), Scopus (Elsevier), CINAHL (EBSCO) databases and gray literature searched from 1 January 1998 to 9 December 2024. Studies were included if participants were First Peoples, their families, or communities, if reported strategies and/or interventions aligned to an international conceptual model for pharmaceutical practice, and study motive was to achieve First Peoples equitable healthcare. Extracted study data author, publication year, country, study design, participants, setting, strategy and/or intervention, and outcome measures. Two independent reviewers screened articles against eligibility criteria and a third reviewer adjudicated, mapping to the contemporary framework and inductive content analysis conducted by one reviewer.

Results: Thirty-six studies published between 2006 and 2024, were included with the majority reporting quantitative findings (75%) and over a third of the studies published after 2020. The majority of studies were conducted in Australia (39%) and the United States of America (36%), followed by New Zealand (17%), Canada (5%) and Brazil (3%). Three main strategies emerged, clinical pharmacy practice, medicines access, and managing medicines with a variety of interventions described in these groupings. Ten studies reported development and implementation of culturally appropriate pharmaceutical care models and 12 studies reported evaluations of services delivered in culturally appropriate settings. Results demonstrated pharmacy practice significantly improved clinical outcomes and increased access; social needs screening and referral was highlighted as a major gap. The authors have combined review outputs, to offer an ideal model for maximizing pharmacy practice contribution to achieving First Peoples health equity.

Conclusion: This review emphasizes urgent requirement for culturally appropriate, innovative, and flexible, advanced pharmacy practice models of care, incorporating First Peoples social requirements, across all settings. Pharmacists require high level communication and leadership skills as well as understanding First Peoples health determinants to build authentic patient-practitioner partnerships, increase community engagement and lead transformative change.

Public knowledge, attitudes, and practices of medicine waste: A questionnaire survey in Denmark

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Background: Unused and/or expired medicine can pose an environmental risk and have negative implications for health if not disposed of properly. In Denmark, pharmacies are required by law to take back medicine waste, and studies

show that about 3 million unused medicine packages are delivered annually to pharmacies. Danish studies on public knowledge, attitudes, and practices concerning medication waste disposal are lacking.

Purpose: This study aimed to explore the knowledge, attitudes, and practices of medication waste disposal among the general public in Denmark.

Methods: A cross-sectional, online questionnaire survey was conducted in December 2024. The questionnaire was constructed using previously tested questions and covered socio-demographic characteristics, self-rated awareness of the correct way to dispose of medication waste, the level of concern regarding correct medication waste disposal, and the latest method used for medical waste disposal. To collect the data, convenience and snowball sampling methods were used by posting links to the questionnaire in local Facebook groups of different cities covering all administrative regions in Denmark and encouraging people to both respond to the questionnaire and forward it to their networks. Descriptive statistics and Chi-square tests, exploring associations between socio-demographic characteristics and attitudes, knowledge, and practices, were employed for analysis of the data. A p-value lower than 0.05 was considered statistically significant.

Results: Responses from a total of 668 participants were used for the analysis. The majority were female (n=570, 85.3%). The largest age group was “Over 61 years” (n=201, 30.1%), followed by “51-60 years” (n=137, 20.5%). Geographically, most respondents were from the Capital Region (n=500, 74.9%). A vast majority (n=629, 94.2%) had experienced having expired or unused medicines. Regarding knowledge, a majority (n=434, 65.0%) claimed they were sure about what to do with expired/unused medicines, a sizeable portion (n=139, 20.8%) thought they knew, while the rest (n=95, 13.2%) were not sure, did not know, or had no clue. Older participants more often claimed to know how to dispose of medication waste (p<0.001). The levels of concern about medicine disposal varied, but the most frequent response was “Not concerned at all” (n=132, 2%). Female (p<0.05) and older participants (p<0.001) expressed higher concerns. Regarding the latest practices of medication waste disposal, the most common one was giving unused/expired pharmaceuticals to the pharmacy (n=472, 75.4%), followed by saving them for later use (n=132, 19.8%) and throwing them in the garbage (n=122, 18.3%); a small percentage (n=7, 1.0%) flushed them down the toilet/sink. Older participants more often delivered medication waste to a pharmacy (p<0.001). The main reasons for not delivering medication waste to the pharmacy were unawareness of such a possibility (n=66, 10.8%), perceived difficulty in doing so (n=60, 9.8%), and lack of time (n=29, 4.8%).

Conclusion: The study indicates that while a significant portion of the Danish public is aware of and practices proper disposal of unused or expired medications, knowledge gaps and malpractice still exist, especially among younger individuals. The role of pharmacies in targeted public education about medication waste disposal could be explored in the future.