

CONFERENCE ABSTRACTS

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Pharmacy technicians

The role of pharmacy support staff in optimizing patient care in a Ghanaian teaching hospital

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Background: Pharmacy support staff play a vital role in patient care in the hospital setting, yet their full involvement in patient-centered clinical activities remains limited in many health systems. Optimising their roles may improve pharmacy service delivery and allow pharmacists to focus on advanced clinical responsibilities. This study assessed the current roles of pharmacy support staff at the University of Ghana Medical Centre (UGMC) and evaluated their readiness to undertake expanded responsibilities to enhance patient care.

Method: A cross-sectional survey was conducted among pharmacy support staff at UGMC using a structured questionnaire from January 1, 2026 to February 28, 2026. Data collected included demographic characteristics, professional qualifications, years of experience, current work activities, role perceptions, training experiences, willingness to undertake expanded responsibilities, and perceived barriers to role optimization. Data were exported and analyzed with Excel 2021. Descriptive statistics were used to summarize responses from 34 participants.

Results: The pharmacy support workforce was predominantly in their early careers, with most staff having 1–3 years of experience (n = 16, 47%). The majority of respondents were aged between 25 and 34 years (n = 22, 65%), and most were female (n = 27, 79%). Pharmacy technicians constituted the majority of respondents (n = 22, 65%), and most held a Higher National Diploma (n = 24, 70%). Professional experience was predominantly within the early years, with 88% (n = 30)

having three or fewer years of experience. Over 80% (n=28) frequently performed dispensing, labelling, packaging, and stock management activities, and 85%(n=29,) reported regular involvement in documentation and record-keeping. Participation in clinical activities was limited by 15% (n=5) reporting that they regularly support pharmacists during ward rounds, while 35%(n=12,) had never participated in ward-based activities.

Majority (n= 33, 97%) reported a clear understanding of their responsibilities, and 82% (n=28) had received job-related training within the previous year. Demand for additional training was identified, particularly in clinical knowledge 79% (n=27), antimicrobial resistance 76% (n= 26), and documentation in patient care 68% (n=23).

Respondents expressed strong willingness to assume expanded responsibilities, particularly in supporting medicines reconciliation 97% (n= 33), medication history taking 44% (n= 15), and antimicrobial stewardship activities 97% (n=33). Key facilitators identified for role expansion included pharmacist support 88% (n=30), clear institutional policies 91%(n= 31), and structured training opportunities 91% (n=31). While more than half of respondents reported no challenges (55.9%, n = 19), among those who did, the main barriers were workload pressures and staffing constraints (17.6%, n = 6), with a few respondents also highlighting limited autonomy, training gaps, and role restrictions.

Conclusion: Pharmacy support staff at UGMC represent a motivated, trainable, and strategically important workforce whose potential contribution to patient care remains underutilized. Realizing this potential will require deliberate institutional investment in targeted training programmes, clearly defined scope-of-practice frameworks, and a collaborative pharmacy team culture that empowers support staff to contribute meaningfully alongside pharmacists. Such measures are not only feasible but essential in a tertiary hospital setting where optimizing every available resource is critical to delivering high-quality pharmaceutical care.

Identifying learning gaps in pharmacy technicians' interpretation of electronic prescriptions using formative assessment

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Background: Pharmacy technicians (PTs) routinely perform prescription data entry and generate dispensing labels from electronic prescriptions (ePrescriptions). Although ePrescribing can reduce some transcription errors, prescriptions requiring manual interpretation, for example complex prescriptions, remain vulnerable to near misses. In a tertiary women's and children's hospital outpatient pharmacy in Singapore, near-miss reports and operational feedback suggested recurring challenges among PTs when interpreting complex ePrescriptions, despite the availability of reference materials and pharmacist-led screening at triage. Purpose: To identify learning gaps in PTs' interpretation of complex ePrescriptions using formative assessment and to use the findings to develop targeted interventions that improve interpretation accuracy and support medication safety in outpatient dispensing workflows.

Method: A case-based formative assessment was conducted in the outpatient pharmacy in which twenty-four PTs completed an individual assessment comprising twenty ePrescriptions that commonly required manual intervention. The assessment was open book to reflect routine practice. Using a standardised checklist, assessors evaluated interpretation of prescription intent, dose calculations, and completeness and correctness of label generation, supported by direct observation and brief oral probing. Error types and frequencies were summarised to identify recurrent themes. Participants received immediate feedback. A post-assessment 5-point Likert survey (n=22) assessed perceived learning, confidence, and usefulness of reference tools and learning activities; free-text responses were analysed thematically. A multidisciplinary focus group reviewed survey results to prioritise gaps and co-design feasible interventions.

Results: The mean assessment score was 16/20. Frequent error themes (≥10 occurrences) were variable dosing (78.8%), step dosing with calculation errors (54.1%), look-alike/sound-alike medication names (54.1%), and inconsistent use of reference materials (41.6%). Survey respondents reported that the assessment and feedback helped PTs identify learning gaps and improve interpretation (81.8% rated ≥4/5). The overall perceived outcome mean was 4.06 (Cronbach's $\alpha=0.873$), with means ranging from 3.95 (confidence) to 4.23 (feedback clarified correct practices). The standard pack list (mean 4.09) and insulin calculator (mean 3.91) were rated more useful than the typing manual (mean 3.14); 36.4% reported never using the typing manual, citing time constraints and limited perceived need or awareness. Free-

text responses highlighted unclear or lengthy triage remarks (54.5%), time pressure, and complex dosing. The focus group prioritised standardising triage remarks, improving access to reference tools, reinforcing immediate feedback after near misses, and targeted refresher training on dosing calculations and high-risk medication name confusion. Preliminary post-intervention tracking has not yet demonstrated reduced data-entry errors.

Conclusion: Formative assessment identified high-frequency learning gaps in PT interpretation of complex ePrescriptions, particularly dosing instructions and medication-name differentiation, alongside modifiable system factors (notably triage communication and underuse of reference resources). These findings support a combined training-and-systems approach, including standardised triage remarks, improved usability of point-of-care tools, and targeted refresher training. Future work should strengthen impact evaluation using longer follow-up and standardised near-miss definitions and assess whether changes in workflow and training reduce near-miss and data-entry error rates over time.

The development of the United Kingdom's first degree in clinical practice for pharmacy technicians

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Background: In the United Kingdom, the role of pharmacy technicians is expanding in response to evolving pharmacy services and increasing clinical demands. In Scotland, a 2024 consultation undertaken by the National Pharmacy Technician Group Scotland identified gaps in clinical knowledge and highlighted the need for higher education to support safe and effective expansion of pharmacy technician's clinical practice. The current entry to practice training does not fully prepare pharmacy technicians for extended clinical responsibilities or progression into advanced clinical roles. This project describes the design and development of the United Kingdom's first degree-level qualification focused specifically on clinical practice for pharmacy technicians, created to address this identified knowledge gap.

Method: A team within the School of Pharmacy, Applied Sciences and Public Health at Robert Gordon University designed, developed and launched the Bachelor of Science with Honours in Clinical Practice for Pharmacy Technicians (CPPT). A multi-stakeholder co-design approach informed the programme development. Curriculum mapping was undertaken to align learning outcomes with the four pillars of practice and the relevant Scottish Credit and Qualifications Framework Levels.

Results: The programme provides a clinically focused and professionally relevant pathway for pharmacy technicians. The curriculum was designed to develop knowledge and capability in clinical therapeutics, critical clinical reasoning, evidence-based practice, public health, and leadership. To support accessibility for working pharmacy professionals, the programme is delivered fully online through a blended learning approach. This model enables national reach, reduces travel barriers, and supports equitable access across sectors while promoting digital capability within the pharmacy technician workforce. Early indicators suggest strong professional interest and endorsement from partners involved in the development process.

Conclusion: This degree represents an important innovation in pharmacy technician education in the United Kingdom. By aligning the curriculum with national priorities and workforce needs, it provides a structured pathway to support the expansion of clinical practice and the development of a future-ready clinical pharmacy technician workforce. Formal evaluation of learner outcomes, workplace impact and progressing pathways is planned as the programme delivery progresses, with potential for wider implementation and collaborations internationally.

Optimising inventory management to minimise ordering of emergency supplies

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Background: The Satellite Pharmacy at KK Women's and Children's Hospital in Singapore experienced frequent medication stockouts due to unexpected increases in usage. These shortages required urgent ordering of emergency medication supply from the pharmacy store, disrupting daily operations and reducing efficiency. The process of collecting emergency supplies was also highly inefficient. Upon confirming an urgent medication request, pharmacy technicians had to place orders through the inventory system and contact pharmacy store staff for confirmation. They then waited 10–15 minutes for the items to be packed before travelling from Level 4 to Basement 1 to collect the medication and return to the pharmacy.

These frequent emergency interventions consumed valuable staff time addressing stock shortages and added stress due to time pressures. Managing these supply crises consumes approximately 400 hours annually - nearly 50 working days. Hence, patients and caregivers may experience extended delays when collecting discharge medications.

Purpose: This project aims to prevent stock shortages and reduce the need for emergency supply orders while

improving inventory turnover. It seeks to enhance operational efficiency and reduce staff workload by reducing time-related pressure.

Method: Three main initiatives were implemented in November 2025 to enhance operational efficiency and inventory management.

First, implement quarterly review and adjustment of inventory par levels using historical emergency supply data. Second, increase buffer stock for frequently emergency-ordered medications from 7 to 14 days of usage. Third, replace ad hoc requests with a consolidated, time-structured ordering process to reduce operational disruptions.

Results: A comparative analysis of the baseline period (August–October 2025) and the intervention period (November 2025–January 2026) showed significant improvements. The number of emergency medication supply order documents decreased from 375 to 269. The number of days with more than six emergency supply requests dropped by 55.5%. The implementation of designated cut-off times for pharmacy store requests further reduced emergency medication supply orders within specified timeframes by 62.5%. Overall, these changes save 113 staff hours annually, substantially reducing workload and pressure. Additionally, they significantly improved operational efficiency within the satellite pharmacy. To validate the effectiveness of these initiatives, analysis of the top ten frequently ordered emergency medication supply items revealed a 60% reduction, decreasing from ten items to four.

Given the limited storage space in the satellite pharmacy, conducting quarterly reviews and adjusting inventory par levels from 7 to 14 days of usage—based on historical emergency supply data—helps identify which items should be stocked in higher quantities without increasing the risk of write-offs or financial loss. Furthermore, these interventions improved adherence to structured ordering processes and reduced reliance on reactive emergency requests.

Conclusion: The implementation of an integrated approach consisting of data-driven reviews, strategic stock buffer increases, and consolidated request processes represents a successful transition from reactive to proactive inventory management, reducing stockouts and operational disruptions. This improvement might potentially shorten patient and caregiver waiting times, ultimately enhancing the overall pharmacy care experience. Based on these positive outcomes, the proven methods can be implemented across other pharmacy sections to achieve division-wide efficiency improvements.

A qualitative study to identify barriers and facilitators for implementation of e-modules for pharmacy technicians using the CFIR framework

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Background: Pharmacy technicians play a crucial role in the hospital care chain, being responsible for medication dispensing, compounding and verification, and patient and healthcare communication. With this, they actively support the safe and effective use of medicines. Lifelong learning is essential for pharmacy technicians to stay current with evolving clinical practices and to continue professional development. Furthermore, a gap often exists between the knowledge acquired during formal education and the competencies required in complex hospital settings. To address this gap and facilitate lifelong learning, tailored e-learning modules, titled Start Well Stay Excellent, were developed for hospital pharmacy technicians. Theoretical implementation underpinnings, such as the use of a consolidated framework, are necessary to understand how and why implementation of such education succeeds or fails. An understanding of these factors lays out the foundation for the development of implementation strategies to ensure the sustainability of e-learning for pharmacy technicians. Therefore, this study employs an established implementation framework to identify barriers and facilitators to implementing e-learning modules for pharmacy technicians in the hospital.

Method: The study was conducted at Erasmus MC, a large academic medical center in Rotterdam with 1,233 beds and over 16,000 employees. The hospital delivers highly specialized tertiary care and provided nearly 800,000 outpatient consultations in 2021. At the time of this study, 230 pharmacy technicians were employed across the clinical and outpatient pharmacy departments. Pharmacy technicians of all the departments of the hospital pharmacy were eligible for this study, even if they had not yet completed the e-learning modules. Semi-structured interviews were conducted using purposeful sampling, resulting in 13 participants from various hospital pharmacy departments. All participants provided written consent.

For this study, the Consolidated Framework for Implementation Research (CFIR) was used to systematically assess barriers, facilitators, and tailor implementation strategies. The interviews lasted between 25 and 54 minutes, with an average duration of 32 minutes.

Three interviews were coded independently by NA and TAP until consensus on the codes was reached. Data was analyzed using ATLAS.ti.

Results: At the time of writing, approximately half of the analysis has been completed. The presentation/poster will report which aspects create barriers and facilitators, and how the barriers can be overcome.

The analysis will be completed by the time of the presentation, and full results will be presented.

Conclusion: This is the first study to investigate the implementation of e-learning for pharmacy technicians. For lifelong learning to become an intrinsic part of professional identity, e-learning should be formally embedded within the workflow. A key strength of this study is the use of a consolidated framework, which increases the applicability of our findings to other educational initiatives intended for healthcare professionals.

Pharmacy technicians as frontline contributors to one health: Operationalizing human, animal, and environmental safety in pharmacy practice

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Background: The One Health framework emphasizes that human, animal, and environmental health are deeply interdependent. While often perceived as primarily technical or task oriented staff, pharmacy technicians increasingly perform functions that directly shape the safety, sustainability, and resilience of health systems. Their responsibilities—spanning antimicrobial stewardship, inventory and waste management, immunization support, and emergency preparedness—place them at critical intersections of One Health priorities. Antimicrobial resistance, pharmaceutical contamination of ecosystems, and climate related disruptions to medication access are major global health concerns. These challenges require broad collaborative action, yet many practical, frontline interventions rest in the daily workflows of pharmacy technicians. Recognizing these contributions is essential to advancing the 2026 FIP World Congress theme, “One Health, One Pharmacy – Bridging Science, Practice, and Education,” and strengthening pharmacy’s role in protecting interconnected health systems. This project aims to describe, categorize, and highlight the practical contributions of pharmacy technicians to One Health objectives. It seeks to demonstrate how core technician led duties align with global health priorities and to identify measurable outcomes illustrating the impact of technician engagement in antimicrobial stewardship, environmental sustainability, public health services, and emergency supply chain resilience.

Method: A descriptive practice review was conducted, mapping routine technician activities across four operational domains: antimicrobial stewardship, environmental sustainability, zoonotic disease prevention, and climate related disaster resilience. Tasks were analyzed in relation to the three, One Health pillars—human, animal, and environment. Sources included organizational practice standards, technician scope regulations, and documented examples from community, hospital, and health system pharmacy settings. Key indicators, such as antibiotic stop date interventions, kilograms of pharmaceutical waste diverted, number of vaccinations administered or supported, and frequency of technician led shortage mitigations, were used to illustrate practical relevance.

Results: Across various settings, pharmacy technicians demonstrated consistent and meaningful contributions to One Health. In antimicrobial stewardship, technicians monitored duration of therapy, reviewed refill patterns for inappropriate antibiotic use, reinforced adherence counselling, and supported documentation of stop dates. These activities reduce unnecessary antimicrobial exposure and mitigate the spread of resistance. In environmental sustainability, technicians led medication take back programs, implemented precise inventory rotation to decrease expired stock, and adopted dispensing practices that reduce plastic waste. Their impact extended into zoonotic disease prevention through immunization delivery, point of care testing, and ensuring timely access to appropriate therapies—actions that reduce infection spread, prevent unnecessary broad spectrum antibiotic use, and increase community immunity. Technicians also enhanced disaster preparedness by managing emergency drug kits, anticipating supply chain disruptions, and securing alternative therapies during climate driven events such as fires or floods. Together, these activities demonstrate a strong alignment between technician practice and One Health objectives.

Conclusion: Pharmacy technicians are essential frontline contributors to the operational success of One Health strategies. Their work supports responsible antimicrobial use, reduces environmental contamination, strengthens public health defenses, and improves system resilience during climate related emergencies. Recognizing and further integrating technicians into One Health initiatives can enhance global health outcomes and reinforce pharmacy's role as a multidisciplinary partner in safeguarding human, animal, and environmental well being.

Antimicrobial resistance knowledge and confidence among UK Pharmacy Technicians: insights from 2024 and 2026 national surveys

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Background: In 2024, the UK Health Security Agency (UKHSA) conducted a national survey assessing healthcare professionals' knowledge, attitudes, and behaviours regarding antimicrobial resistance (AMR). Pharmacy technicians recorded the lowest AMR related knowledge, highlighting a capability gap. To support targeted education and assess changes over time, this study compared pharmacy technician responses from the 2024 national survey with findings from a 2026 pre-webinar survey, held in collaboration with the Association of Pharmacy Technicians UK.

Method: A survey (anonymous and with consent) was distributed via Microsoft Forms to pharmacy technicians prior to the start of a national AMR webinar in March 2026. The questionnaire included items from the validated national survey to allow direct comparison. Descriptive analysis was undertaken using Microsoft Excel.

Results: One hundred and thirteen (n=113) pharmacy technicians responded in 2026 (2024: n= 258); sixty percent of participants reported no current involvement in AMR related activities. In 2026, 41% were specialist (AMR and non AMR) pharmacy technicians (2024: 14.7%), 47% worked in generalist roles (2024: 67%) and 12% were pre-registration trainee pharmacy technicians. Hospital settings accounted for the largest proportion of respondents (48%), with community pharmacy representing 8%.

Motivation to engage in antimicrobial stewardship (AMS) activities was attributed to professional responsibility (21%) and a desire to develop further knowledge and skills (21%). Only 9% of the respondents had undertaken AMS specific education while 27% had received IPC training.

Perceived understanding of AMR was reported at 95.5% in 2026 (95.3% in 2024), More than two thirds reported confidence in advising patients (2026: 74%; 2024: 86.4%). Awareness of the role in infection prevention and control (IPC) was high (2026: 82.7% 2024: 92.6%). Confidence in having sufficient antibiotic use knowledge for their role was lower (2026: 69.7% 2024: 86.8%) and the proportion who felt they had a key role in controlling AMR remained low (2026: 62.8% 2024: 45.6%).

For 2026 survey, 59.2% (67/113) of respondents answered all seven knowledge questions correctly, compared with 37.2% (96/258) in 2024. Almost all respondents recognised that antibiotics are ineffective against viruses (2026: 97.3% 2024: 94.6%) and colds or flu (2026: 97.3% 2024: 97.7%). Almost all respondents in both years understood risks associated with unnecessary antibiotic use (2026: 99.1%; 2024: 99.2%). Awareness that all antibiotic use increases the risk of resistant infection (2026: 80.4% 2024: 78.3%) and that healthy individuals can carry resistant bacteria (2026: 81.3% 2024: 85.3%) was similar. Awareness that resistant bacteria can spread between people remained the question with the lowest correct response rate (2026: 67.9% 2024: 51.9%).

Conclusion: The findings show that although pharmacy technicians' AMR knowledge has improved, this has not translated into confidence, role ownership, or consistent engagement in AMS, with many reporting limited involvement in AMR activities or opportunities to apply knowledge in practice. Targeted support is needed to build confidence, strengthen translation of stewardship knowledge into daily roles, and enhance integration within multidisciplinary teams. Planned activities including additional webinars, surveys, newsletters, peer-led videos, and publication of findings aim to mobilise knowledge and increase meaningful engagement.

The use of interprofessional scripted role-play during university training to teach pharmacy and pharmacy technician students how to work together.

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Background: Effective communication and teamwork among health professionals can significantly impact patient outcomes, staff satisfaction, and operational efficiency. In the context of community pharmacy, collaboration between professionals is an integral component of daily practice and the first collaboration stand between pharmacists and pharmacy technician. Despite the close working relationship between these two professions upon graduation,

opportunities for collaborative learning are quite limited. Following the transition of pharmacy technician training to university-level education in France in 2021, the Faculty of Pharmacy in Lille has drawn on its expertise in creating scenario-based learning environments to implement interprofessional teaching for students in their final year of pharmacy technician training and those in their penultimate year of pharmacy studies specialising in community pharmacy.

The objective of this study was to evaluate students' perceptions of their progress and their confidence in their role within the pharmaceutical team, as well as their understanding of the scope of practice of each profession within that team. This was achieved through role-play scenarios based on real-life cases from community pharmacy practice.

Method: Questionnaire based on the study conducted by Guirguis et al. in Canada in 2020, was proposed to all pharmacy and pharmacy technician students at the conclusion of their interprofessional lesson. The data collected was analysed using a Likert scale to assess the value of the exchanges between the two professions. The questionnaire was concluded with an open-ended question inviting the respondents to provide both positive and negative feedback.

Results: The questionnaire was distributed to students over the course of two academic years. 180 pharmacy students and 448 pharmacy technician students completed the questionnaire following their practical session. The large majority of students report a very high level of satisfaction with the teaching provided. They also reported a better understanding of their respective roles and the benefits of teamwork.

Conclusion: The results suggest that the implementation of these cross-disciplinary teaching practices between pharmacy technician students and pharmacy students is of significant educational value and provides a useful means of improving the quality of professional practice, helping to develop the collaborative skills required for coordinated practice in a pharmacy.

Computational design of an electrostatic-optimized peptide to disrupt the TIM 3/Galectin 9 checkpoint and reverse T Cell exhaustion

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Background: T cell exhaustion limits the efficacy of cancer immunotherapy. The immune checkpoint TIM-3, through its interaction with Galectin-9 (Gal-9), is a key contributor to this dysfunctional state. Although blocking this interaction holds therapeutic promise, existing strategies face challenges related to tumor immune evasion. There is a need for novel, rationally designed modulators that can effectively and selectively disrupt the TIM-3/Galectin-9 axis. This study aimed to develop an interpretable computational platform for the precise design of peptide-based immune checkpoint modulators. The objectives were to: (1) establish a multi-dimensional physicochemical scoring framework for rational peptide design; (2) apply it to the TIM-3/Gal-9 checkpoint to generate a candidate that reverses T cell exhaustion; (3) demonstrate its broader utility for accelerating peptide drug discovery and advancing next-generation immunotherapies.

Method: A deep learning-based algorithmic system, MCSE (Molecular Complementarity by Surface Evaluation), was developed for both the generation and evaluation of peptide candidates. It assesses peptides through multi-dimensional physicochemical metrics—including electrostatic complementarity, spatial volume matching, hydrophobicity, and polarity. Unlike conventional black-box machine learning models, MCSE integrates explicit physicochemical rules with iterative optimization of peptide sequence and three-dimensional conformation. Using this framework, a virtual library of 1.7 million sequences targeting the TIM-3/Gal-9 domain binding pocket was generated. These sequences were subsequently subjected to three-dimensional structure generation and prioritized via a dual-scoring strategy incorporating MCSE-derived peptide-design scores and predicted binding affinity. Through this integrated screening pipeline, ten lead peptides were selected, synthesized, and experimentally validated. Moreover, the MCSE pipeline was deployed as a web-based tool (<https://slb.hospitalstar.com:7008/>) to enable broader adoption.

Results: Computational analysis revealed that electrostatic complementarity between the peptide and the target pocket is a key determinant of binding affinity, providing a generalizable design principle. The multi-dimensional scoring framework demonstrated that structural compatibility and binding affinity are complementary metrics—neither alone predicts functional potency—validating the need for integrated assessment. Among the synthesized peptides, AT3P19 bound TIM-3 with high affinity and effectively

disrupted the TIM-3/Gal-9 interaction. In functional assays, AT3P19 restored cytokine production in exhausted CD8⁺ T cells, with increased levels of IFN- γ , IL-2, and TNF- α . T cell apoptosis was significantly reduced compared to untreated controls.

Conclusion: An interpretable deep learning-based platform, MCSE, was developed that enables rational design of peptide inhibitors through multi-dimensional physicochemical evaluation and iterative optimization. The platform's utility was validated by the identification of AT3P19, a charge-optimized peptide that reverses T cell exhaustion by disrupting the TIM-3/Galectin-9 checkpoint. The MCSE web tool provides the research community with an accessible resource for designing peptide-based modulators against protein targets of interest, supporting the development of next-generation immunotherapies.

Development of training video modules on aseptic techniques related to the preparation of hazardous and non-hazardous sterile products

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Background: In spring 2011, the Groupe de travail sur les préparations stériles (GTPS), a professional working group of hospital pharmacists experts in sterile preparation compounding, was created by the Association des pharmaciens des établissements de santé du Québec (A.P.E.S.) to support pharmacy departments in implementing standards in the preparation of sterile and hazardous medicines. To this end, the GTPS developed tools, policies, and procedures that comply with standards 2012.01, 2014.01, and 2014.02 set by the Ordre des pharmaciens du

Québec, the pharmacy regulatory authority in Quebec, for both sterile and non-sterile preparations. These resources serve as a common reference for training, standardisation of practices, and staff performance evaluation and are regularly updated to ensure their relevance and alignment with best practices. To facilitate the development of knowledge and skills related to these resources, particularly regarding aseptic techniques, innovative training videos were developed. These tools contribute to promoting rigorous staff training and maintaining safe practices to ensure the quality of sterile products and care provided in Quebec hospitals.

Method: During the first phase, a structured literature review of standards, guides, and policies and procedures governing the preparation of hazardous and non-hazardous products was conducted. Real-world data were also collected through direct observation of aseptic techniques in various hospitals to compare and ultimately harmonise practices between pharmacy departments in accordance with standards 2014.01 and 2014.02. During the second phase, educational content, including scriptwriting and filming preparation, was developed through collaboration between GTPS members, students in biopharmaceutical sciences, and pharmacy technical assistants. Educational video modules were filmed, edited, and disseminated through a dedicated microsite on sterile products and non-sterile compounded preparations in June 2024 and September 2025.

Results: Following two 15-week filming and editing cycles, 91 training videos were produced and uploaded to the A.P.E.S. website: 44 videos on aseptic techniques for non-hazardous sterile products and 47 videos for hazardous sterile products. The number of training video views increased fourfold from 206 consultations in 2024 to 839 consultations in 2025. Furthermore, in 2025, the dedicated microsite ranked first among the five most consulted A.P.E.S., totalling 4,124 consultations.

Conclusion: The production of these videos provides access to dynamic, high-quality educational tools, facilitating the development of essential aseptic techniques in preparing sterile and hazardous medicines. This project also contributes to compliance with current quality standards, thereby strengthening staff and patient safety. The videos are accessible to all A.P.E.S. members and can also be made available to educational institutions upon request, including colleges and vocational training centres offering pharmacy technician and assistant courses, thus contributing to knowledge dissemination and transfer. As of February 2026, nine colleges and four vocational training centres have integrated the training videos in their curricula. As for non-sterile preparations, the development of a new series of videos is under consideration.

Strengthening pharmaceutical supply chains through pharmacy technician capacity building: Lessons from multi-country health systems interventions in Sub-Saharan Africa

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Background: Pharmacy technicians form the backbone of medicines management in many low- and middle-income countries (LMICs), particularly in faith-based and peripheral health

Objective: To assess the impact of structured capacity-building interventions for pharmacy technicians on pharmaceutical supply chain performance and medicine quality assurance in selected African countries.

Method: A mixed-methods implementation approach was applied across faith-based health networks in East and West Africa. Interventions included competency-based training in inventory management, quality assurance, reporting, and basic regulatory compliance; supportive supervision; and use of standardized assessment tools. Pre- and post-intervention assessments evaluated changes in stock management practices, reporting accuracy, and adherence to quality standards. Qualitative feedback was collected from pharmacy technicians and facility managers.

Results: Capacity-building interventions led to measurable improvements in stock record accuracy, reduced stock-outs of essential medicines, and improved adherence to good storage and distribution practices. Pharmacy technicians demonstrated increased confidence, clearer role definition, and improved collaboration with facility leadership and regulatory stakeholders. Facilities reported strengthened accountability and more reliable pharmaceutical data for decision-making.

Conclusion: Investing in pharmacy technician capacity building is a cost-effective and scalable strategy for strengthening pharmaceutical supply chains in resource-limited settings. Clear role definition, practical training, and supportive supervision enable pharmacy technicians to play a critical role in improving access to safe, quality medicines.

Relevance to Practice

This abstract highlights transferable strategies for empowering pharmacy technicians as essential contributors to resilient health systems and quality pharmaceutical services.

Implementation of a medication order entry certification program for pharmacy technical assistants in a tertiary academic hospital

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Background: Medication order entry is a critical and high-risk step in the medication-use process of hospital pharmacy departments and is commonly delegated to pharmacy technical assistants in the absence of an electronic prescription system. Despite initial staff training and ongoing pharmacist supervision, medication order entry errors can occur and compromise patient safety, increase pharmacists' workload, and reduce processing time. To our knowledge, no formal certification standards for pharmacy technical assistants exist to assess and maintain competency for medication order entry in Quebec, Canada. This lack of guidance has led to heterogeneous practices in training, performance evaluation, and error management across hospital settings, revealing a significant gap in workforce competency assurance and medication safety.

The objective of this project was to develop, pilot test, and propose a structured certification programme for pharmacy technical assistants performing medication order entry in a tertiary academic hospital, with the aim of standardising practices, supporting competency maintenance, and reducing entry-related errors.

Method: A multi-step approach was undertaken at the Centre hospitalier de l'Université de Montréal (CHUM), a tertiary teaching hospital in the province of Quebec, Canada. First, a literature review was conducted to identify recommendations related to certification or competency assessment of pharmacy staff involved in medication order entry. Second, an internal analysis of medication order entry errors identified by pharmacists during order validation was performed over a one-month period in April 2025. Descriptive statistics and chi-square tests were used to analyse error rates. Third, a survey was conducted to describe current training, evaluation, and error management practices across provincial pharmacy departments. Finally, a certification procedure combining theoretical examination with

supervised practical assessment was developed and pilot-tested with pharmacy technical assistants.

Results: First, our literature review highlighted the absence of clear and applicable recommendations regarding certification of pharmacy technical assistants for medication order entry. Our one-month internal analysis included 35,796 medication orders and identified a mean overall error rate of 7.63% (95% CI: 7.36% - 7.90%). The most frequent errors involved duplicate or non-discontinued orders (18.1%), incorrect start or end dates/times (15.6%), and missing drug (15.3%). Significant variability in error rates was observed across order entry pharmacy units ($p < 0.00001$) specifically in general inpatient wards vs critical care.

In the provincial survey, 19 different hospital pharmacy departments responded, revealing wide heterogeneity in training duration, assessment methods, and acceptable error thresholds; none reported having a formal certification process.

Based on these findings, a certification programme with a maximum acceptable error rate of 5% was developed. Pilot testing with pharmacy technical assistants of varying experience levels demonstrated feasibility and relevance to practice, with observed error rates ranging from 2.5% to 3.1%.

Conclusion: This project demonstrates the feasibility of implementing a structured medication order entry certification program for pharmacy technical assistants. This program will now be introduced at our center to harmonise practices, support competency maintenance, and enhance medication safety. This model could be adapted to other hospital pharmacy settings and integrated into broader workforce development and quality improvement strategies.

Using the theory of planned behavior to understand the perceived impact of pharmacy technicians as immunizers across Canada and the United States

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Background: Pharmacy technicians now have an expanded role within the immunization workflow, providing care to the communities they serve across Canada and the United States. Their role within the vaccine delivery model has increased and with that expansion, development efforts are needed to better understand their perceived impact within the communities that they serve. Using the Theory of Planned Behavior (TPB) can help researchers explain how Pharmacy

Technician Immunizers (PTI) believe they can impact attitudes, subjective norms, and perceived behavior control to shape vaccination efforts within their communities.

Objective: To explore the perceptions of PTI's using the TPB to better understand their perceived influence on patient vaccination behaviors and overall impact on immunization rates within the communities they serve.

Method: This qualitative study uses key informant interviews with PTI's to expand on experiences around delivering vaccines, engaging with patients that are hesitant, and addressing additional barriers. Interview questions have been mapped to the TPB; up to a combined forty PTI's from Canada and the United States will be interviewed in this investigational study. Participants were recruited through email to complete interviews with a member of the research team; completed interviews were transcribed and jointly coded among the investigators using the TPB theoretical framework.

Results: Participating technician's answer questions built around attitudes that address their perceived impact on patient immunization rates, hesitancy, reasons for refusing a vaccine, navigating cost, and other challenges related to delivery. Researchers hope to investigate subjective norms that look to explore longstanding relationships between technicians and patients; these established relationships may lead patients to seek out specific technicians to provide vaccines, who have built trust, a professional relationship or cultural connection. The perceived behavioral control component of TPB examines strategies that may increase access to vaccinations through efforts like extending the pharmacy hours of operation outside of the traditional workday, providing additional accommodations to patients in rural or hard to reach locations and creating an environment where patients feel welcomed.

Conclusion: The research involved in this study will help others to understand how PTI in Canada and the United States see themselves within their expanded pharmacy role. By using the TPB framework, researchers can help determine if these individuals believe they are helping shape attitudes, impact subjective norms, and reduce barriers for those seeking vaccination care within their community. Based on these results, educational efforts can be shared to enhance communication efforts, build the confidence of other PTI's, and support policy efforts for expanded PTI roles.