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CONFERENCE ABSTRACTS

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Social and administrative pharmacy

Stepping up impactful advocacy: Building partnerships with decision-makers through Thank Your Pharmacist Day

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Background: Pharmacists play a crucial role in healthcare, with their contributions vital for access to medicines and the delivery of accessible and patient-centered care. Despite this critical role, pharmacists' contributions are often underappreciated.

Similarly, the role of pharmacists in Australia is growing, with additional clinical roles being introduced in recent years. There is potential for these roles to grow further following recent regulatory changes and recommendations contained in the Australian Governments scope-of-practice review. However, much of this potential growth in scope of practice is dependent on support of political and governmental decision-makers.

Objective: Undertake an advocacy campaign which increases engagement with political stakeholders and increases their familiarity with the contribution of pharmacists in Australia's health care system.

Methodology: PSA introduced Thank Your Pharmacist Day (TYPD) in 2022 as an annual initiative to raise awareness about the value pharmacists bring to the health system with politicians and encourage the public to express gratitude to pharmacists. The theme of TYPD for 2025 was 'stepping up', reflecting the growing role of pharmacists in Australia's health system.

PSA organised a series of engagement activities, social media campaigns which invited pharmacists and political stakeholders to publicly thank pharmacists for 'stepping up' when needed by their patients and community. The primary mode of engagement with pharmacists and political stakeholders was email distribution.

Results: The initiative received widespread participation, with engagement across social media platforms. This included 128,573 views of PSA campaign materials on social media (4,287 LinkedIn, 14,446 Instagram and 109,840 Facebook), 35 identified posts of political stakeholders (17 Instagram, 18 Facebook) and 64 identified posts of pharmacies and health services (13 LinkedIn, 31 Instagram, 20 Facebook).

At least 27 politicians, including the majority of state health ministers, posted social media content which thanked pharmacists, citing different contributions pharmacists in their geographical area. Approximately a third of the politicians who posted social media content for TYPD made a visit to a local pharmacy for the event.

Thematic review of politician's posts identified familiarity and appreciation for pharmacists regarding a diverse range of roles which predominantly related to the theme of 'stepping up'. This included recognition of emerging roles such as vaccination, prescribing for common ailments, treatment of minor injuries and supporting people with substance use disorder.

Qualitative review of responses to social media posts indicated that pharmacists appreciated the positive sentiment from colleagues and external stakeholders.

PSA officials visited 18 pharmacies and other workplaces of pharmacists on TYPD.

Further analysis of social media commentary, including an analysis of posts year-on-year is needed to provide further insight into the effectiveness of the event in building political familiarity with pharmacists' emerging role in Australia.

Conclusion: TYPD 2025 successfully exemplified the theme 'Stepping Up' in organic social media of politicians,

organisations employing pharmacists and pharmacists. This is suggestive of growing familiarity of political stakeholders with the evolving role of pharmacists.

Ideation to implementation: driving better and broader adoption of a core medicines list for palliative care in community settings to enhance access to critical medicines

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Background: Many Australians with a terminal illness express a strong preference to be cared for and to die at home, rather than in an inpatient facility. However, patients receiving palliative care at home and their carers often report difficulty achieving timely access to the medicines needed for alleviation of common symptoms such as pain, nausea, dyspnoea, agitation and respiratory tract secretions. Contributing factors are complex and multifactorial and include limited health practitioner awareness of symptom management and anticipatory prescribing, cost barriers, poor interprofessional collaboration and lack of clinical governance structures across primary care.

The concept of a core palliative care medicines list containing an agreed list of essential medicines for patients with life-limiting illnesses is well established. Historically however, variations in jurisdictional regulations and local prescribing preferences have led to inconsistencies in core palliative care medicines lists around Australia.

Objective: Drive development and adoption of an evidence-based and nationally consistent core palliative care medicines list for use in primary care settings across Australia.

Methodology: Between 2018 and 2023, the Pharmaceutical Society of Australia's Projects (PSA Projects) team engaged in a series of projects with government and non-government partners to establish and promote utilisation of locally relevant core palliative care medicines lists.

In partnership with 7 Primary Health Networks and 2 state health departments, PSA delivered palliative care education to hundreds of pharmacists across key regions and encouraged the routine stocking of core medicines to support timely access. The projects included mapping of the community pharmacies that committed to stocking the core medicines to enhance visibility to prescribers.

Following successful delivery of these initiatives over several years, PSA Projects was engaged by the national palliative care project caring@home to develop a nationally consistent core palliative care medicines list.

Results: During 2023-24 PSA provided critical input into caring@home's national working group of palliative care experts to develop a concise list of core palliative care medicines to be adopted Australia-wide. Guiding principles included affordability and evidence of efficacy, plus consideration of each medicine's administration, transport and storage in the community. Importantly, the list was also informed by the Palliative Care Therapeutic Guidelines, Therapeutic Goods Administration, and existing state/territory lists of core palliative care medicines.

In March 2024 the National Core Community Palliative Care Medicines List was released. It consists of four medicines (morphine, hyoscine butylbromide, haloperidol and clonazepam) to address the five symptoms most commonly experienced at end of life.

Further work is underway to progress the national adoption of this list.

Conclusion: Through leadership and advocacy over time, PSA Projects has driven the wider establishment, adoption and promotion of core palliative care medicines lists in Australia's primary care sector, culminating in the development of a national list. Ongoing implementation of this list, including health practitioner development, will continue to support greater uptake at a national level.

Understanding barriers and facilitators to HIV PrEP access, use and adherence in urban Indigenous peoples in Toronto

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Introduction: Indigenous Peoples experience disproportionately higher incidences of HIV infection compared to settler Canadians. This makes PrEP a plausible solution to decrease transmission, however it remains poorly adopted among Indigenous Peoples in Canada. Further, minimal research seeks to understand what Indigenous Peoples know, or do not know, about PrEP.

Method: Indigenous methodologies was used to describe the experiences of PrEP in Indigenous Peoples in Toronto. A community-based advisory board consisting of a Two-Spirit Elder Advisor, HIV community champions, knowledge users, and the research team was established to help execute four Talking Circles alongside 2-Spirited People of the 1st Nations in Toronto. Talking Circles were audio recorded, transcribed, and analyzed using Indigenous Theorizing.

Results: Thirty people participated in the Talking Circles. No participant was currently or had ever taken PrEP. Queer men and participants working for non-profit organizations had an in-depth understanding of PrEP, while women and straight

men tended to have minimal to no understanding of PrEP. Considerations for taking PrEP included allergies, pregnancy compatibility, side effects, drug interactions, dosing frequency and cost. Patient-level facilitators to PrEP included mail delivery options, coverage through Non-Insured Health Benefits, incorporation of culture and Indigenous ways of understanding health in care delivery. Barriers included the near-exclusive promotion of PrEP to the gay community, frequency of bloodwork and mistrust in healthcare systems, pharmaceutical industry and Western medicines. Participants also acknowledged the patriarchy, racism and stigma as determinants for the lack of PrEP awareness in Indigenous communities - especially womxn. Intramuscular PrEP was favored over oral. Suggestions to improve PrEP awareness included educating outreach workers, attending community events like Powwows, education at the First Nations high schools, and education through Elders and social media.

Conclusion: Talking Circles were effective and culturally appropriate to understand how Indigenous Peoples conceptualize PrEP. Culturally tailored health promotion is needed to improve PrEP uptake.

Pharmacists' perceptions on the telepharmaceutical services for users of the Brazilian Public Health System with asthma and chronic obstructive pulmonary disease (COPD)

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Introduction: Asthma and chronic obstructive pulmonary disease (COPD) are highly prevalent respiratory diseases worldwide, impacting not only individuals and their families but also healthcare systems. The involvement of pharmacists in patient care can significantly improve treatment adherence, reduce the frequency of asthma attacks, emergency visits, and hospitalizations, enhance patients' quality of life, and lower overall healthcare costs. In Brazil, telepharmaceutical services have been integrated into the Brazilian public health care system to expand access to healthcare services, particularly in underserved areas where resources are unequally distributed. This study aimed to analyze pharmacists perceptions regarding the provision of pharmaceutical care through teleconsultations for users of the Brazilian public health system diagnosed with asthma and COPD.

Methods: A qualitative approach was used with pharmacists providing teleconsultations and an analysis of over 200 telepharmaceutical consultations conducted with patients diagnosed with asthma and COPD. Key areas assessed included pharmacists' roles in therapy management, patient adherence, inhaler technique education, and identification of factors triggering disease exacerbations, such as mental health disorders. Additionally, recommendations for treatment adjustments made by pharmacists to prescribers were documented.

Results: After conducting over 200 telepharmaceutical consultations, it was observed that pharmacists are well-qualified to fill critical gaps in the healthcare system.

Conclusion: As active members of multidisciplinary teams, pharmacists play a crucial role in managing chronic diseases by promoting and monitoring medication adherence, ensuring proper inhaler device usage, identifying triggers for exacerbations such as psychological distress and developing individualized action plans for disease management. Furthermore, pharmacists were able to suggest dose adjustments or treatment modifications to prescribers based on symptom severity, side effects, or other clinical considerations.

Perception of healthcare providers in a quasi-government hospital on providing health services to men who have sex with men in Ghana

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Introduction: Men who have sex with men (MSM) face significant barriers to accessing HIV services. These barriers include stigma, discrimination, fear of legal repercussions, financial constraints, lack of MSM-friendly healthcare settings, and inadequate knowledge on sexual health among healthcare providers. Despite significant investments in HIV prevention, testing, and treatment, uptake remains low among MSM, leading to poorer outcomes. These barriers may be worsened further by pressure on the Ghanaian government to criminalise same sex relationships by assenting to the anti- Lesbian, Gay, Bisexual, Transgender, Queer Plus (LGBTQ+) bill.

To design inclusive and effective interventions that address health disparities associated with access to HIV services by MSM, it is essential to understand healthcare workers' perceptions regarding health service provision to MSM. This study explored the perceptions of healthcare workers in a quasi-government hospital regarding service provision to MSM, focusing on their attitudes, beliefs, feelings and knowledge about sex education and male homosexuality.

Method: A descriptive cross-sectional study was conducted among 29 health workers at a primary hospital in Ghana. Data was collected using a structured, pre-tested questionnaire,

which assessed demographics, beliefs, attitudes, feelings, and knowledge about sex education and male homosexuality. Data collection was done between 17th August and 6th September 2022. Data analysis was carried out with MS Excel ® and SPSS ®, with descriptive statistics and correlations estimated to assess homophobic attitudes and knowledge among the respondents.

Results: The study revealed that irrespective their demographics, healthcare workers generally hold homophobic attitudes and beliefs about MSM. The following categories of respondents demonstrated relatively higher homophobic attitudes and beliefs: female, Muslim, aged 31-40 years, having a master's degree and those with 6 – 10 years' work experience. Despite these attitudes, most healthcare workers expressed willingness to provide care to MSM, citing professional duty. Additionally, 17.24% of respondents reported receiving some form of training on MSM healthcare. Knowledge about sex education and male homosexuality was limited, with 83% of respondents scoring below 50% on the knowledge test. Prior training in MSM healthcare provision did not significantly improve knowledge scores. More than half of all respondents believed their professional education adequately covered MSM health needs, albeit objective knowledge assessments indicating otherwise. This mismatch between perceived and actual competence suggests the need for targeted training programs to improve healthcare providers' understanding of MSM-related health issues.

Conclusion: Healthcare workers in this study exhibited homophobic attitudes and limited knowledge about male homosexuality, which could hinder effective healthcare provision to MSM. However, their willingness to provide care suggests that professional ethics may override personal biases. The findings highlight the need for targeted training programs to improve healthcare workers' knowledge and reduce homophobic attitudes, ultimately enhancing healthcare access for MSM in Ghana. Addressing these systemic barriers would contribute towards ensuring that Ghana's healthcare system is aligned with global health equity goals and that all individuals, including MSM, have unhindered access to quality healthcare services.

Further studies are recommended to explore interventions that address these barriers and promote equitable healthcare delivery for key populations.

Improving community pharmacists' ability and confidence to respond to suicidal patients: Results from a randomised trial

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Introduction. A growing body of global research has documented that individuals visit pharmacies prior to a suicide attempt. Estimates of the prevalence of pharmacist interactions with patients with suicide warning signs range from 33% in the United States (US) to 84% in Australia and Canada. Although international and national pharmacy organizations have endorsed pharmacists' role in suicide prevention, suicide prevention training rates for pharmacy staff remain low worldwide. In order to equip pharmacy staff to act as suicide prevention gatekeepers (individuals who recognise suicide warning signs and refer at-risk individuals to appropriate resources), it is imperative to evaluate the effectiveness of pharmacy-focused suicide prevention training programs. The objective of this study is to determine whether a suicide prevention training program for community pharmacy staff in the US improves participants' suicide prevention outcomes.

Method: Between April 2022 to April 2023, a convenience sample of 120 community pharmacists and pharmacy technicians from the southeastern US was recruited to participate in a randomised trial. Eligible participants completed an online baseline survey and were randomised to either the control (Pharm-SAVES) or intervention group (Pharm-SAVES Plus). Pharm-SAVES is a 30-minute online training that includes didactic content, resources, and three videos that model how to respond to an individual who exhibits suicide warning signs. Pharm-SAVES Plus supplements Pharm-SAVES with two interactive video cases. Both trainings recommend the use of the US National Suicide Prevention Lifeline (988) for referrals. Immediately after completing the training, participants completed a post-training survey. The baseline, post-training, and 1-month follow-up surveys assessed suicide prevention knowledge, gatekeeper self-efficacy, and gatekeeper preparedness. The baseline and post-training surveys also included a written case that asked participants how they would respond to a hypothetical patient with suicide warning signs. Case responses were independently coded by two coders who were blinded to both time (baseline or post-training) and study group assignment. For each response, coders reached consensus on whether participants directly asked about suicide and referred patients to 988. Generalized Estimating Equations (GEE) were used to examine whether scores on the outcomes of interest varied over time (baseline, post-training, 1-month follow-up) and by intervention group (Pharm-SAVES, Pharm-SAVES Plus).

Results: Eighty-seven participants (73%) completed the immediate post-training survey and 69 (58%) completed the 1-month survey. There was no evidence that any outcome was better for individuals who received the two interactive video cases in the Pharm-SAVES Plus group. However, significant improvements by time were observed for each outcome ($p<0.01$), including a 2-point increase in suicide prevention knowledge on a 9-point scale, a 1-point increase in self-efficacy on a 5-point scale, and a 2-point increase in gatekeeper preparedness on a 7-point scale. The percentage of participants who directly asked about suicide in their written case response increased significantly from 10% at baseline to 71% at post-training, and 988 referrals increased from 54% at baseline to 74% post-training.

Conclusion: Both Pharm-SAVES and Pharm-SAVES Plus improved participants' suicide prevention outcomes, including communication and referral behaviors. Future work should examine whether participants were able to apply the training in their practice.

Impact of telepharmaceutical Care on people with asthma in a public pharmacy in the state of Rio Grande do Sul: a feasibility study

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Introduction: Asthma is a chronic, heterogeneous and inflammatory disease of the airways that requires specific care and adequate treatment to remain under control. The objective of this study was to carry out a feasibility study with patients diagnosed with asthma from a public pharmacy in the state of Rio Grande do Sul.

Method: The patients were randomized into four groups: intervention by telephone, intervention by video, intervention by text message (SMS) and control group. The primary outcome was change in asthma control as assessed by the Asthma Control Test (ACT) at time zero and after three months.

Results: As a result, there was a significant increase in the mean ACT score, going from 15.57 to 17.80 points ($p=0.026$) only in the video intervention group.

Conclusion: Other groups did not show statistically significant changes. Finally, the use of technologies with audiovisual resources has been shown to be effective in improving the use of the inhaler device, resulting in better asthma control.

Educational needs to develop an educational intervention on the storage and disposal of unusable medicines in a primary school

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Introduction: The family medicine cabinet is characterized by providing the necessary medical supplies to treat minor ailments and perhaps including over-the-counter medicines while waiting for medical assistance. However, it is common for medicines that were prescribed by a doctor to be stored at home, and this is considered a risk factor in the irrational use of medicines, mainly due to easy access, which has resulted in higher volumes of purchases and, consequently, excessive quantities stored inappropriately at home.

Methodology: A cross-sectional study was conducted among students in grades 1-4 of a primary school in the state of Hidalgo during January-May 2024. A questionnaire was constructed by searching scientific literature with emphasis on questionnaires related to the measurement of the degree of knowledge, beliefs, and practices of storage and disposal of medicines. The instrument consisted of three sections: knowledge, beliefs, and practices, with a total of 26 items respectively, and included questions on general and socio-demographic data; expert opinion was considered for the construction of the questionnaire through the Delphi method; at the end of each survey, participants were asked to bring their non-useful medicines, including deteriorated and expired medicines, for future visits, so that non-useful medicines could be collected for correct disposal.

Results: Results: Of the total number of participants, 51.04 % were female and 48.95 % male. The percentage of age for participants aged 6-7 years corresponded to 45.83 %, participants aged 8-9 years was 43.22 %, and participants aged 10 years were only 10.93 %. The results of the survey showed that the main knowledge identified was the loss of effect of the medicine when exposed to the sun as well as the effect of temperature on its quality; the least knowledge identified was about the effect on the environment of disposing of medicines in municipal waste. Regarding beliefs, the most common belief was to take care of the environment from contamination of medicines, and the least common was the need to check the expiry date before using a medicine. In terms of practices, the most common place in the home for storing medicines was the bedroom and the least common place was the bathroom. The collection of medicines made it

possible to identify that 92.65% of the medicines stored at home were not useful, of which 3.3% were damaged and 84.05% expired; the main source was the private sector (53.62%) and the public sector (46.37%). In addition, the main pharmaceutical form in households is tablets (58.9%). In terms of pharmacological groups, the medicines with the highest presence in households are antibiotics (15.94%), followed by NSAIDs (13.04%)

Conclusion: This study allowed us not only to know the beliefs, knowledge, and practices in the use of medicines but also to collect the non-useful ones from each household, collaborating in the reduction of waste in the municipal rubbish; therefore, based on these results, environmental education activities will begin in the primary school.

Perspectives of the Asociación Farmacéutica Mexicana to 2030

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Background information: Pharmaceutical Sciences play an important role in achieving the Sustainable Development Goals (SDGs) 2030. Different countries and institutions establish different strategies, schemes, and innovative plans to achieve the goals. Since 1966, in Mexico, the Asociación Farmacéutica Mexicana (AFM) has contributed to the strengthening of professional pharmaceutical work in areas such as academia, industry, and health regulation. To continue fulfilling its mission and vision, a strategic planning process is required, considering the strengths and opportunities as well as the advances made over 58 years through the work of countless pharmacists. Considering the demographic, scientific, and technological changes, it is imperative to integrate a plan that sets the course for the work of the Mexican Pharmaceutical Association towards 2030, in three periods 2024-2026, 2026-2028, and 2028-2030, in correspondence with the time of each board of directors.

Purpose: Build the short, medium, and long-term work plan of the Asociación Farmacéutica Mexicana from key perspectives on the future of pharmaceutical sciences that support pharmacists in Mexico at different levels, such as academia, industry, and regulatory affairs

Methods: An exploratory, descriptive study was conducted over six months. The construction of the work plan consisted of two stages to identify the key perspectives of leaders on the future of the pharmaceutical sciences that would be included; in the first stage, a documentary analysis was carried out by consulting updated literature on the perspectives of the Pharmaceutical Sciences towards 2030. The Delphi method was then used, inviting nine Directors, nine Deputy Directors, and five Past Presidents as experts to select the lines of work. Subsequently, 9 lines of work were proposed based on the fulfilment of the mission and vision of the AFM, which are united to strengthen the SDG 2030.

Results: The main challenges identified for Mexican Pharmaceutical Sciences, which were included in the AFM's work plan are: the connection between the pharmaceutical industry, academia, and the healthcare system; innovation and technology; continuous training of students and professionals; commitment to health and the environment; strengthening community, hospital, and clinical pharmacy, including social pharmacy, which benefit the Mexican population. The experts considered that this plan will significantly contribute to the role that the AFM has played in the development of all those associated with pharmaceutical sciences through scientific and technological research.

Conclusion: Asociación Farmacéutica Mexicana must position itself as the most important in Mexico by implementing a strategic plan for 2030 to achieve international alliances that enable the professional development of students and professionals related to pharmaceutical sciences.

Trends in syphilis treatments and the impact of intramuscular injectable benzathine penicillin G in Japan: A descriptive study from April 2016 to September 2023

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Background: Syphilis is a sexually transmitted disease caused by Treponema pallidum. The incidence of syphilis in Japan has been increasing in recent years, it becomes a significant public health threat. A new treatment for syphilis, involving intramuscular penicillin injections that require only a few doses, was launched in January 2022 in Japan. Despite the increase in treatment options and the revision of treatment

guidelines, the actual status of syphilis treatment in Japan has been rarely reported, leaving certain uncertainties.

Purpose: This study aimed to determine the actual status of syphilis treatments in Japan and investigate the impact of the newly launched intramuscular penicillin formulation.

Method: Data from the Japanese Administrative Claims Database (April 2016 to September 2023) were analysed. Patients aged 15 years or older with a definitive diagnosis of syphilis (the International Classification of Diseases-10: A51, A52, A53), confirmed by both treponemal and non-treponemal tests within the same month, and who were prescribed antibiotics for syphilis, were included. The type of antimicrobials prescribed, the proportion of patients using probenecid with oral penicillin, and trends in initial prescriptions by year were described. Characteristics of patients prescribed intramuscular injectable benzathine penicillin G were described. The median number of medical visits during the first month following diagnosis was also calculated. Probability values for statistical tests were two-tailed, and a p-value < 0.05 was considered statistically significant. All statistical analyses were performed using SAS version 9.4 (SAS Institute, Cary, NC, USA).

Results: A total of 7,867 patients were included, with a mean age of 39.3 years; 81% (6,436 patients) were male, and 5.4% (426 patients) were human immunodeficiency virus positive. The most common age groups were 30–39 years for males (27.1%, 1,747 patients) and 20–29 years for females (38.9%, 557 patients). Seventy-five per cent of patients were diagnosed in facilities with 0–19 beds. Throughout the study period, 86.7% (6,819 patients) of those analysed were prescribed oral amoxicillin; this was followed by 15.2% (1,199 patients) prescribed oral minocycline, and 6.7% (531 patients) prescribed oral doxycycline. Among the 6,953 patients treated with oral penicillin, 6.3% (435 patients) received probenecid combination therapy, including 95 of these 435 patients were human immunodeficiency virus positive. The proportion of amoxicillin prescriptions decreased from 83.0% in 2016 to 76.6% in 2023. By 2023, 10.6% of patients with syphilis were prescribed intramuscular benzathine penicillin G, making it the second most commonly used drug for syphilis in 2023. Compared with those who did not receive this treatment, those who received it tended to have fewer clinic visits over 1 month (p = 0.0256).

Conclusion: Oral amoxicillin is the primary treatment for syphilis in Japan; however, the number of patients receiving intramuscular injectable benzathine penicillin G has increased since the launch of it. An intramuscular injectable benzathine penicillin G prescribed mainly by clinics may contribute to a decreased number of office visits.

Pharmacists and environmental responsibility: Towards a greener future

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Introduction: Pharmacists play a crucial role in the future of healthcare, improving patient outcomes and quality of life. However, production, distribution, consumption, and disposal of medicines can have significant environmental consequences. Pharmaceutical residues have been detected in water bodies, soil, and even wildlife, raising concerns about their impact on ecosystems and human health. Recognising the urgent need to mitigate these effects, the Portuguese Pharmaceutical Society (PPS) has established a dedicated Working Group on Medicines and the Environment, coordinated by the pharmacist Humberto Martins. This initiative aims to integrate sustainability into pharmaceutical practice and highlight the role of pharmacists in environmental protection. By fostering awareness and advocating for sustainable practices, the group seeks to minimise the ecological footprint of pharmaceuticals while maintaining their therapeutic benefits.

Method: The Working Group on Medicines and the Environment was established in March 2024. It consists of six pharmacists with extensive experience in environmental sustainability, pharmaceutical sciences, and public health. The group undertook a multidisciplinary approach, engaging in research and policy analysis. Key areas of focus included pharmaceutical production, supply chain sustainability, waste management, and public education. The group conducted a thorough review of existing literature on pharmaceutical pollution and analysed current policies and best practices across Europe. Based on these insights, they developed strategic guidelines and recommendations tailored to pharmacists, aligning three priorities: contributing to public health policies, implementing pharmaceutical policy measures, and reinforcing pharmacists' commitment to environmental sustainability.

Results: As a result of its efforts, the working group developed a comprehensive document titled “Position of the Portuguese Pharmaceutical Society: Medicines and the Environment”. This publication provides an in-depth analysis of how pharmacists can contribute to sustainability in their daily practice. The document emphasises the importance of rational medicine use, improved patient counselling on proper disposal methods, and the implementation of take-

back schemes for unused or expired medicines. Additionally, it highlights the need for greener pharmaceutical production processes, advocating for reduced energy consumption, eco-friendly packaging, and minimisation of hazardous waste. Furthermore, the document underscores the role of pharmacists in raising public awareness about the environmental impact of medicines. Educational campaigns and training programmes are suggested as effective means to empower both healthcare professionals and patients to adopt more sustainable behaviours. The working group also stresses the importance of collaboration between the pharmaceutical industry, regulatory authorities, and healthcare institutions to ensure the successful implementation of environmentally responsible initiatives.

Conclusion: The establishment of the Working Group on Medicines and the Environment by the PPS represents a significant step towards integrating sustainability into pharmaceutical practice. Pharmacists have the potential to influence medicine use and waste management in a way that protects both human health and the environment. By fostering interdisciplinary collaboration and promoting sustainable pharmaceutical practices, this initiative contributes to a greener, more responsible healthcare system. Moving forward, continued research, policy development, and public engagement will be essential to ensuring the long-term success of these efforts.

Evolution of pharmacist specialisation and board certification: a model for achieving FIP development goal 4

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Introduction: The International Pharmaceutical Federation (FIP) Development Goal 4 seeks to enhance patient care and health systems, specifically through common, shared understanding of specialisation and advanced practice and through systematic recognition of markers for advancement and specialisation in the workforce. Furthermore, FIP envisions global practice infrastructures supporting advanced practice and specialisation through board certification, residency training, continuing professional development, and validation of competencies. Literature is growing to demonstrate improved quality of patient care, increased access to care, and enhanced medication safety through integration of specialised, advanced practice pharmacists (many of whom hold board certification). In the United States (US), pharmacists often begin specialisation during residency training, then demonstrate advanced, specialised competencies through achieving Board of Pharmacy Specialties (BPS) board certification. Continued competency is supported by maintaining certification.

Objective: To describe the evolution and current state of pharmacist specialisation and advancement in the US, and to promote ongoing discussion and research on the future directions and impact of pharmacist specialisation on patient care and health systems.

Method: A descriptive overview of the history, current state, and future directions of pharmacist specialisation and board certification is provided, focusing on FIP Development Goal 4 elements.

Results: Since 2000, Accreditation Council for Pharmacy Education (ACPE) standards require the Doctor of Pharmacy degree as the entry-level credential for pharmacists in the US. In following years, an increasing number of pharmacists sought post-graduate year 1 (PGY1) residency training and further specialised as post-graduate year 2 (PGY2) residency training programs were established in emerging areas. Following education, training, and appropriate practice experience, pharmacist specialists earn board certification to demonstrate mastery of competencies unique to the specialty practice area.

The Council on Credentialing in Pharmacy defines a credential as evidence of professional qualifications, which may include academic degrees, licensure, certificate training programs, board certification, and more. BPS board certification is unique in rigor and validity. A pharmacist must meet eligibility requirements, pass a psychometrically-sound examination, and demonstrate continued competency to maintain the credential. The BPS psychometric process includes job analysis and examination content outline development; item writing and item review; examination assembly and standard setting; examination publication and administration; and examination evaluation.

Beginning with five specialties recognized prior to 2000, 15 specialty certification programs are now recognized by the BPS. This reflects the increasing specialisation of pharmacy practice. In 2009, the number of active BPS board certifications surpassed 10,000 for the first time. At the end of 2024, BPS recognized over 62,000 active certifications globally, over 7800 of which are held by pharmacists outside the US. A board-certified pharmacist now exists in approximately 60 countries, demonstrating the global reach of specialisation through board certification.

Conclusion: The described model for pharmacist specialisation meets several FIP Development Goal 4 elements. Specialisation through board certification, which is uniquely rigorous and valid, is increasing in prevalence globally and emerging specialties continue to be recognized. Ongoing research is needed to monitor the impact of specialisation through board certification on patient care and health systems.

Knowledge and adherence to oral anticancer medicines among oncology patients: insights from the National Hospital, Galle, Sri Lanka

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Introduction: Cancer is a leading global cause of morbidity and mortality despite advances in treatment, including chemotherapy. Oral anticancer medicines have become integral to cancer therapy, offering benefits such as convenience and greater patient autonomy. Although oral anticancer medicines are effective against cancer cells, they also cause damage to healthy cells, leading to side effects. Patients may find it difficult to cope with the challenges of oral chemotherapy as they may not be adequately prepared for the associated distress, which may result in poor quality of life during treatment.

Objective: The study aimed to assess the knowledge and adherence to oral anticancer medications among oncology patients at the National Hospital, Galle, Sri Lanka. It also sought to explore the relationship between patients' knowledge and demographic details.

Methods: A cross-sectional, descriptive study was conducted at the oncology clinic, including 272 participants prescribed oral anticancer medications for at least one month. The data were collected via a validated questionnaire, covering demographics, knowledge of dosage regimens, and medication adherence, using the 4-item Morisky Medication Adherence Scale. Descriptive statistics were applied, and data were analyzed using SPSS software. Ethical approval was obtained, and patient privacy was ensured. The study period spanned from December 2023 to October 2024.

Results: The majority of participants were female (74.26%) and aged 45 years or older (91.54%), with most (66.91%) aged 55 and above. Educationally, 40.07% had completed up to the Ordinary Level, and 36.03% had education below this level. All participants were aware they were prescribed oral anticancer medications, and 81.6% visited the clinic regularly. The most prescribed medication was anastrozole (40.44%), followed by tamoxifen (21.69%).

The knowledge of dosage regimens was generally poor, with 73.5% unaware of the name of the medicines and 74.6% unaware of their dose. Overall, 70.6% of participants had poor knowledge of the dosage regimen. Higher educational levels were associated with better knowledge of the medication. Many patients did not follow meal-related instructions for taking their medication, with notable non-compliance with drugs like imatinib and sorafenib.

Regarding the purpose of the medication, 66.5% understood it as controlling the disease rather than curing it. Thirty-nine percent had been on medication for over three years. When dealing with side effects, most patients (65.8%) contacted their cancer clinic for guidance. Medication adherence levels showed that 6.3% of patients had poor adherence, 54.8% had moderate adherence, and 39% had good adherence.

Conclusion: The study found that most patients on oral anticancer medications were females aged 45 and older. Despite awareness of being prescribed anticancer drugs, many lacked knowledge about the name and dose of their medication. Education level was positively correlated with a better understanding of dosage regimens. Knowledge of the dosage regimen did not depend on the duration of treatment. Discontinuation of medication was most often due to drug unavailability. Most patients sought help from cancer clinics for side effects and followed safety precautions well. Adherence to the medication regimen was moderate, though there was variability in overall adherence among patients.

Drug shortages in Latin America: Impact and strategies from the pharmaceutical perspective

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Introduction: Drug shortages are a significant global challenge with serious implications for healthcare systems, patient safety, and treatment continuity. In Latin America, the problem is exacerbated by import dependency, supply chain disruptions, economic instability, and regulatory inconsistencies. Despite increased recognition of this issue, there is limited data on its scope and impact in the region, making it difficult to implement effective mitigation strategies. This study aimed to assess the perception, frequency, and impact of drug shortages in Latin American hospitals. Additionally, it sought to analyse the strategies implemented to mitigate the effects of shortages, providing evidence to support the development of more effective policies and supply chain management practices in the region.

Method: A descriptive, cross-sectional study was conducted through a survey targeting pharmaceutical professionals and

procurement personnel in 123 hospitals across eight Latin American countries. The survey included closed-ended questions addressing the frequency and impact of drug shortages, the existence of contingency plans, strategies implemented to mitigate the issue, and the effectiveness of notification systems. Data collection took place in January 2025, on a voluntary and anonymous basis. The results were analyzed using frequency and percentage calculations, as well as chi-square statistical tests to identify significant associations between variables, with a significance level of 5% ($p < 0.05$).

Results: A total of 123 responses were received. Drug shortages were identified as a major issue in 92 (74.80%) of the hospitals, with 37 (30.08%) reporting daily shortages. Half of the hospitals (53.66%) had contingency plans in place, and these were associated with a lower frequency of shortages ($p = 0.0031$). The most common strategies used were therapeutic substitution (84.55%), collaboration with other institutions (76.42%), and stockpiling critical medicines (42.28%). The primary causes of shortages included procurement issues (69.92%), global active pharmaceutical ingredient (API) shortages (47.15%), and supply chain disruptions (46.34%). Chemotherapeutic agents (37.40%), oral insulins (38.21%), and immunostimulant drugs (30.08%) were most frequently affected.

Conclusion: Drug shortages in Latin America represent a significant burden on healthcare systems, impacting treatment continuity and patient safety. Despite the implementation of mitigation strategies, such as contingency plans and alternative sourcing, their effectiveness remains inconsistent across hospitals. Strengthening regulatory frameworks and improving supply chain resilience are crucial steps to reduce the frequency of shortages. Additionally, enhancing communication mechanisms and promoting regional collaboration can help ensure more efficient distribution and access to essential medicines. Future research should focus on refining these strategies and exploring innovative solutions to address the root causes of shortages in the region.

Investigating the accessibility of HIV Self-Tests from Australian community pharmacies: A simulated patient study

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Introduction: Community pharmacies can play a critical role in the prevention and management of HIV infections. Regular and accessible testing is a core element of strategies to promote early detection and reduced transmission of HIV. Self-testing kits for numerous infectious diseases have become more readily available from community pharmacies in recent years. Self-testing kits for HIV offer an alternative to traditional HIV testing options and were made available via community pharmacies in Australia in 2021. Limited evidence regarding the experience of accessing these kits from community pharmacies exists. This study aims to explore the availability and accessibility of HIV self-testing kits from Australian community pharmacies using the simulated patient method.

Method: A random, representative sample of 365 community pharmacies from Australian states and territories with publicly accessible registers of pharmacy premises was generated and stratified by location (Metropolitan/Region, Rural, Remote) according to the Modified Monash Model. A standardised telephone script was developed whereby the researchers anonymously call a pharmacy acting as a member of the public requesting to speak to the pharmacist to enquire about the availability of HIV self-testing kits. Primary data collection commenced in April 2024 and is ongoing. Telephone discussions were documented using a purpose-designed electronic data capture form. Data were analysed descriptively.

Results: To date, 183 of 365 planned telephone calls have been conducted. Nine pharmacies (4.9%) had HIV self-testing kits in stock and readily available. Ten pharmacies (5.5%) were able to order in the kits for the next delivery, often the next business day. Many pharmacy staff (n=79, 43.2%) were unfamiliar with the self-testing kits and 24 (13.1%) gave erroneous information regarding the availability of the kits, such as saying they were not approved for use in Australia. When self-testing kits were not stocked, pharmacy staff most frequently referred callers to another pharmacy (n=58, 31.7%), a doctor (n=32, 17.5%), or provided no advice (n=20, 10.9%).

Conclusion: Interim results indicate that consumers wishing to access self-testing kits may not be able to readily obtain these from community pharmacies. Pharmacy staff lack familiarity with self-testing kits and may not be equipped to provide adequate advice to consumers seeking HIV testing. These findings suggest opportunities to provide educational interventions to community pharmacy staff to enhance their role in HIV prevention.

Development of a strategy and organizational culture related to citizen engagement

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Background information: Citizen involvement is recognized by the World Health Organization (WHO) as a key factor in improving the safety, efficiency, and sustainability of healthcare systems. Evidence shows that active citizen participation leads to better resource allocation and health outcomes2. In addition, the International Pharmaceutical Federation (FIP) has set FIP Development Goal 15 - "People-centred Care", as one of the objectives for the pharmacy profession until 2030, highlighting the importance of this approach. In response, the South and Autonomous Regions Branch (SARB) of the Portuguese Pharmaceutical Society (PPS) has established a framework to integrate citizen engagement within the organization, to foster its action and initiatives.

Purpose: Development of a Citizen Engagement Strategy to improve patient participation in healthcare decision-making and to promote an organizational culture related to citizen engagement within the SARB.

Methods: To develop the strategy, a benchmarking analysis of national and international citizen engagement practices was conducted. Existing evidence on its impact in healthcare delivery, particularly in pharmaceutical sector, was analysed. The initial steps to develop a proper strategy involved identifying key action areas, followed by setting clear objectives and concrete targets to achieve.

Results: The strategy was structured around three pillars: Citizen Participation in the PPS, Pharmacist Training, and Citizen Empowerment. The first pillar fosters a patient-centered culture by engaging with patient associations and civil society, with key actions including staff training and ensuring citizen involvement in PPS initiatives. Until the present moment, four joint actions with associations representing people living with disease and their caregivers have been carried out, and a collaboration agreement has been signed with one of them. The second pillar focuses on empowering pharmacists and educators with skills to effectively engage with patients and caregivers through training programs. In this context, two pharmacist intervention courses on a certain disease were developed and updated in partnership with the respective national patient association. The third pillar focuses on enhancing health literacy through awareness campaigns and educational resources, about safe and responsible use of medicines.

Conclusion: The development of a citizen engagement strategy has enabled the organization to restructure its activities and foster the establishment of valuable partnerships to achieve the defined objectives and targets. The implementation phase of the strategic plan is currently being implemented, and the achievement of targets is being monitored.

Emerging areas of the pharmaceutical profession

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Background information: Over the past two decades, new practice areas have emerged for pharmacists and graduates in Pharmaceutical Sciences, where these professionals have played a prominent role. In response, the South and Autonomous Regions Branch (SARB) of the Portuguese Pharmaceutical Society (PPS) launched the "Working Group for Emerging Areas of the Pharmaceutical Profession" in 2022. The initiative aimed to identify and value these areas, as well as strengthen the connection between the PPS and professionals working in them. In 2024, the group's conclusions and action plan were presented, with implementation already underway by SARB.

Purpose: This work aims to present the results of the working group, as well as the advancements in implementing the established action plan.

Method: SARB invited pharmacists and graduates in Pharmaceutical Sciences to join the working group through its communication channels. The selected candidates were divided into three focus groups, each meeting three times under the moderation of a market research expert. Following these sessions, participants completed a questionnaire on the topics discussed and took part in a final session to debate the main results. These results were then used to develop an

action plan structured into three phases: short-term actions (3 months), medium-term actions (6 months), and long-term actions (over 12 months). Launched in 2024, this plan aims to assess professionals' needs, organise informative events, evaluate the feasibility of specialisations, and establish discussion forums to provide advice to SARB, identify training needs, and explore potential pharmaceutical specialisations.

Results: The working group defined "Emerging Areas of Pharmaceutical Profession" as dynamic fields in constant evolution, considering factors such as the number of graduates in Pharmaceutical Sciences working in these areas, their relevance to health and well-being, and the pharmacist's role. Key sectors identified include Market Access/Health Economics, Pharmaceutical Marketing, Real-World Evidence, Biotechnology, Medical Affairs, and Governmental and Public Affairs. As part of the action plan, a survey was conducted to identify the needs and expectations of professionals working in these areas, aiming to gain a comprehensive understanding of their key interests and challenges. This analysis seeks to inform and support SARB's work, ensuring its initiatives align with professionals' demands and sectoral developments. Also, a regulatory framework has been developed as a first step towards the establishment of discussion forums, ensuring their structured implementation and effective operation, visits to professionals in emerging fields are taking place, workshops for students on career opportunities in emerging areas are being organised, and SARB has hosted a recurring event bringing together key stakeholders from the pharmaceutical and healthcare sectors for structured discussions, with this edition focusing on emerging areas of the pharmaceutical profession.

Conclusion: It is essential that the SARB continues to foster active participation and ensure the representation of these professionals and that it actively contributes to ensuring that they continue to be the best qualified to fulfil roles in the emerging areas of the pharmaceutical profession. To achieve this, SARB will proceed with the action plan, namely by following up on the survey results and establishing the discussion forums.

The cost-effectiveness analysis of maintaining disease remission in atopic dermatitis patients using Abrocitinib and Dupilumab: From the perspective of healthcare payers

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Background: Atopic dermatitis (AD) is a common chronic, recurrent inflammatory skin disease affecting up to 20% of children and 10% of adults. Its pharmacological treatment is divided into three lines: the first-line treatments include topical corticosteroids and antihistamine skin anti-itch agents; the second line involves topical calcineurin inhibitors, short-term oral high-dose corticosteroids, and antibiotics; the third line consists of oral immunosuppressants, including biologics (IL-4/IL-13 inhibitors) and small molecule oral drugs (JAK inhibitors).

Objective: This study aims to analyze, from the perspective of healthcare payers, whether there are differences in cost-effectiveness between the use of Abrocitinib 100mg, Abrocitinib 200mg, and Dupilumab 300mg in AD patients.

Methods: We conducted a keyword search in PubMed and Embase using the following six terms: Abrocitinib, Baricitinib, Upadacitinib, Dupilumab, atopic dermatitis, and eczema. This search yielded 262 clinical articles. We then selected independent, randomized, double-blind clinical trials based on study duration, drug regimens, and primary outcomes as the clinical data source for the pharmacoeconomic analysis. Three clinical trials were chosen to compare JAK inhibitors combined therapy with single Dupilumab, with the primary efficacy endpoints assessed using the Investigator's Global Assessment and Eczema Area and Severity Index (EASI) over 12 and 16 weeks of drug treatment. The cost for a 16-week treatment course was calculated based on Taiwan's National Health Insurance (NHI) reimbursement prices.

Results: Analysis based on Taiwan's NHI reimbursement costs showed that, compared to Abrocitinib 100mg and Dupilumab 300mg, Abrocitinib 200mg demonstrated a lower incremental cost-effectiveness ratio (ICER) of -1,106,613.8, meaning that to achieve an EASI-75 in 1% of patients, the cost per 4-month treatment course was about 1.1 million NTD less. In terms of the cost-effectiveness plane, Abrocitinib 200mg also fell within the quadrant of lower cost and higher effect.

Conclusions: According to this preliminary cost-effectiveness analysis, Abrocitinib 200mg offers better cost-effectiveness than Abrocitinib 100mg and Dupilumab 300mg. Although the clinical benefit data for patients were derived from clinical trials in Europe and the US, many hospitals in Taiwan have passed international medical accreditation by JCI, making the medication data relevant. It is recommended that future analyses use real-world data from Taiwan to further assess the benefits of drug selection and guide health insurance reimbursement policies.

Quality indicators for community pharmacy in Switzerland

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Introduction: Quality indicators (QIs) in healthcare describe a set of performance measures that reflect the quality or outcomes of healthcare services. They are valuable tools for assessing and improving patient care and healthcare delivery processes. QIs are multidimensional and vary in appropriateness for every healthcare area (HCA). In response to the Swiss Federal Quality Commission, a national project was launched in 2024 within the Swiss Learning Health System (SLHS) network. This project aims to identify and select appropriate QIs for a national quality monitoring system.

Purpose: The goal is to identify and evaluate potential QIs to contribute to the establishment of a national quality monitoring framework. for the HCA of community care, which includes community pharmacy and rescue services in Switzerland and internationally.

Method: In the initial phase, experts, stakeholders and ongoing initiatives in Switzerland were consulted to gather insights into existing QIs. In addition, a review of the relevant grey literature and a systematic literature search of the Embase and PubMed databases are under way. QIs will be organized into the dimensions structure, process, service, and outcomes. In the final phase, the findings will be synthesized and evaluated through a Delphi study to select QIs appropriate for the community care HCA.

Results: Focusing on community pharmacy, a total of 23 experts in the HCA of community pharmacy and related fields have been consulted, of which 13 provided a response. Preliminary findings indicate that very few pharmacy-specific QIs are currently used in Switzerland. Experts and stakeholders suggested various potential QIs, which did mainly comprise process and structural quality. These include, for instance, the assessment of pharmaceutical consultations using mistery shoppers or the participation of pharmacy staff in training programs.

Conclusion: Preliminary results suggest a lack of use of QIs in Swiss community pharmacies. Raising awareness about QIs, their importance in assessing primary care performance as well as outcomes, and their role in improving a healthcare system's quality is essential. The development of a structured catalogue of pre-selected QIs could facilitate their integration into everyday practice routines, providing stakeholders with accessible tools.

Ensuring the safe use of herbal food supplements: Council of Europe guidance for healthcare professionals and consumers

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Background information: The European Directorate for the Quality of Medicines and HealthCare (EDQM) is a Directorate of the Council of Europe, an intergovernmental organisation (based in Strasbourg, France) set up to promote democracy and protect human rights and the rule of law in Europe. The EDQM, is committed to ensuring the quality and safety of healthcare across its member states. The growing availability and use of herbal food supplements (HFS) have raised concerns about their safe and appropriate use, quality, potential interactions with medications and/or other food supplements, and misleading claims. It is therefore essential to provide both healthcare professionals (HCPs) and consumers with clear, comprehensive guidance.

To address this need, the Committee of Experts on Quality and Safety Standards in Pharmaceutical Practices and Pharmaceutical Care (CD-P-PH/PC), whose secretariat is provided by the EDQM, initiated a project in May 2021 to develop two key documents:

1.A guidance document for healthcare professionals (HCP) to support them in advising consumers on the safe and appropriate use of HFS.

2.A leaflet to provide consumers with essential knowledge to avoid potential risks and ensure the appropriate use of HFS.

Purpose: The aim of these documents is to promote the safe use of HFS by equipping HCPs with the necessary knowledge to guide consumers, while also enhancing their awareness about potential risks, possible interactions with concomitantly used medications and/or other food supplements, and some high-level regulatory aspects.

Method: A multidisciplinary working group, consisting of experts from Council of Europe member states, developed the guidance and the leaflet. The documents were drafted through an iterative process involving literature review and stakeholder feedback to ensure clarity, scientific accuracy, and practical relevance.

Results: The guidance for HCP provides a structured approach to help them advise consumers on the appropriate use, potential risks, and high-level regulatory framework of HFS. It includes key counselling points, common misconceptions,

and practical recommendations to minimize misuse and potential interactions with medicines and/or other food supplements.

The consumer leaflet offers easy-to-understand, accessible, and user-friendly information to help them make informed decisions about HFS use. It highlights safety considerations, regulatory aspects, and the importance of consulting HCPs before making use of these products, especially in case of vulnerable groups (e.g. pregnant and breastfeeding women). It also emphasizes the need to follow labelling instructions or HCP recommendations and to purchase HFS from reliable sources.

Conclusion: By equipping HCPs and consumers with reliable and easy-to-understand information, this initiative contributes to the safe and appropriate use of HFS, improving public healthcare in Europe, minimizing potential risks associated with these products and reinforce the role and expertise of HCPs in guiding consumers.

Council of Europe's guidelines to harmonize the medication review process in Europe

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Background information: The European Directorate for the Quality of Medicines and HealthCare (EDQM) is a Directorate of the Council of Europe, an intergovernmental organisation (based in Strasbourg, France) set up to promote democracy and protect human rights and the rule of law in Europe. The EDQM is in charge of ensuring the basic human right of access to good quality medicines and healthcare in Europe.

In March 2020, the Committee of Ministers of the Council of Europe adopted Resolution CM/Res (2020)3 on the implementation of pharmaceutical care for the benefit of patients and health services. Among other things, the Resolution recommends that medication reviews (MR) be performed as part of the pharmaceutical care process. The MR process appears to have been implemented in different ways and to different degrees across the Council of Europe member states leading to variable outcomes.

Purpose: To provide guidance for harmonizing the pharmacist-led MR process in Europe, under the oversight of the EDQM and coordinated by the intergovernmental Committee of Experts on Quality and Safety Standards in Pharmaceutical Practices and Pharmaceutical Care (CD-P-PH/PC).

Method: A multidisciplinary working party of pharmacists, academics and representatives of national competent authorities developed the guidelines through a combination of face-to-face meetings, circulation of draft text and consultation with stakeholders. Successive drafts were reviewed and revised until a final consensus text was agreed.

Results: The guidelines contain 9 chapters that establish a standard terminology and definition framework for MR. They include guidance on conducting MR, managing data collection and storage, and the necessary training to support MR development. Additionally, the guidelines emphasize MR resources to streamline its integration into European healthcare practices. Published in November 2024 and freely available, these guidelines mark a step forward in standardizing MR procedures to improve patient care and medication safety.

Conclusion: The guidelines will assist national authorities, pharmacists, and healthcare professionals in structuring MR processes to optimize medication use, enhance patient safety, and improve health outcomes. MR, as a tool of pharmaceutical care, promotes efficient medicines management across Europe.

Systematic review of mental health in HIV/AIDS care: Evaluating pathophysiology, standards of care, and research gaps

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As the push to eradicate HIV/AIDS epidemic gains momentum, there is growing recognition among communities affected by HIV/AIDs— including people living with, at risk of, or impacted by the virus— as well as clinicians, researchers, and advocates, of the need to prioritize mental health within HIV standard care. Achieving this requires a comprehensive, person-centred approach that integrates mental, neurological, and substance use conditions into all aspects of HIV/AIDs care, ensuring they meet the diverse needs of affected individuals and address possible drug-drug interactions. The standard of care for HIV/AIDS in Botswana involves initiating antiretroviral therapy (ART) as soon as possible, along with comprehensive care and support, including addressing co-morbidities and promoting adherence to treatment.

The primary aim of this study is to conduct a systematic review of standard of care practice in Botswana, and how mental health therapy, is integrated into treatment. The study aims to also identify gaps in inclusion of this population in clinical trials for the further enhancement of standard of care.

A systematic literature review was performed to develop a comprehensive overview of the determinants of HIV/AIDs standard of care, psychiatric disorders in people living with HIV/AIDs as well as clinical trial inclusion/exclusion criteria in

Botswana. This review followed the protocol of the Preferred Reporting Items for Systematic Reviews and meta-Analyses (PRISMA) for systematic reviews.

The systematic review identified significant gaps in the integration of mental health support within Botswana's standard of care for HIV/AIDS. While ART initiation and adherence support were well-established, mental health services—including psychosocial interventions, psychiatric care, and substance use treatment—were inconsistently implemented across healthcare facilities. Pharmaceutical care was also not established in treatment guidelines. Only 10% of HIV/AIDS clinical trials in Botswana included participants with mental health conditions. Common exclusion criteria included history of psychiatric illness, substance use disorders, or cognitive impairment, limiting trial outcomes for this population.

These insights underscore the importance of a holistic, person-centred approach to HIV/AIDS standard of care, ensuring that mental health is not less important, but a core component of treatment and support.

National drug formulary: Evaluating the usability of the national drug reference base

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Introduction: The National Drug Formulary (NDF) is a Singapore-specific, authoritative, and national reference base to guide evidence-based best practices for medication prescribing, dispensing, administration, and monitoring by consolidating clinical and drug related information. In line with other national initiatives, NDF also promotes individual ownership of health through patient education and empowerment. NDF website was launched in April 2022 and has seen more than 100,000 total site visits within a year of launch. This study aimed to evaluate the usability of the website, identify areas for continuous improvement and review potential upgrades that would be useful to the target audience post launch.

Method: A survey was conducted in targeted NDF users to provide their feedback on the website during June 2023. The survey consisted of 4 sections: "Using the NDF Website", "User Experience", "Alternative Sources & Additional features", and "Profiling". Majority of the questions were close-ended and only questions on suggestions to improve the website were open-ended questions. A survey link was sent out to Healthcare Professionals (HCPs) in Singapore, whom we have engaged previously for pre-launch feedback and NDF's launch activities. The survey was also available on the NDF website to allow other users to provide their valuable feedback. The responses were evaluated based on the following criteria: use frequency, outreach, utility of information provided, ease of use and user profile.

Results: The survey garnered a total of 213 responses. Out of the 109 (51.1%) respondents who did not access NDF before, 97 (89.5%) were unaware of the website. Of the 104 respondents who had accessed NDF before, 62 (59.3%) were practicing from the hospitals. Majority (62.0%) of the respondents who have accessed the website liked the consolidated information offered by NDF website, indicating its success as a one-stop source of information. Other appealing aspects of NDF website included the ease of finding information and the up-to-date information available. Overall, 66 (64.4%) of the respondents who have accessed the website rated the website at least 4 out of 5 and about 9 in 10 NDF users would recommend NDF website to others. Improvements suggested by respondents included improving comprehensiveness and adding in of new features such as product images.

Conclusions: NDF website met the objective to provide and consolidate localised drug-related information into a single source. The project team review on top 3 enhancements identified from survey responses, which were 1) increase search speed, 2) include drug images and, 3) insert product inserts onto the website. As majority of the respondents who did not access the NDF website were not aware of it, more emphasis would be needed to publicise NDF and clarifying its objective via communications and engagement sessions for the healthcare professionals.

A landscape analysis of respiratory health risks in a changing climate: Insights from a global social study

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Introduction: Global Challenges such as air pollution and climate change pose significant risks to respiratory health, highlighting the need for evidence-based interventions that are informed by a comprehensive analysis of public discourse. Although online discussions about air quality and climate-related respiratory health issues are increasing, they rarely address individual lifestyles modifications and proactive strategies. This study aims to characterise online discourse surrounding air pollution, climate change and their impacts on respiratory health, while also identifying opportunities for pharmacists, a connecting link between the public and healthcare system, to improve public health outcomes through targeted education on interventions and mitigation strategies.

Methodology: A qualitative content analysis of online discourse was conducted across multiple platforms including

X (formerly Twitter), blogs, and news outlets in English, from December 17, 2023, to December 17, 2024. Data were collected using search engines on topics like climate change, air pollution, respiratory diseases, and mitigation strategies. The study examined audience responses including insights from influential contributors such as experts and academics. Data analysis was performed using Edelman DXI's social listening tool and Quid Discover, with findings organised into thematic clusters and emerging trends.

Results: The Analysis revealed that while online discourse frequently addresses climate change and air pollution in relation to respiratory health, the discussion remains largely event-driven and localised rather than consistently addressing long-term health risks. Climate related topics such as wildfires, rising temperatures, and heat waves received significant attention and engagements. However, indoor air pollution—a critical risk factor—was rarely mentioned, despite its impact on respiratory health. Most conversations focused on the harmful effects of gas stoves, firewood, and biomass, with limited discussion on technological advancements, psychological and neurological impacts, and lifestyle modifications.

Although extreme weather events and climate change, were widely covered, specific links between these phenomena and respiratory health—such as dust storms that transport airborne pathogens or floodwaters harbouring harmful microbes—were infrequently explored and predominantly limited to academic circles. Issues like the extended pollen seasons were mainly highlighted by healthcare professionals. Overall, only a small fraction of both experts and public discussed mitigation strategies such as lifestyle changes, investments in air purification, the use of personal protective equipment, and behavioural adjustments. These modifications include minimising outdoor exposure during periods of heightened pollution, maintaining frequent cleaning practises, regular showering, and using saline solutions for nasal irrigation. These findings highlight the gaps in awareness, educational needs, and the opportunities for integrating lifestyle changes to effectively improve the respiratory health.

Conclusion: The findings of this landscape analysis underscore an urgent need to raise public awareness about the links between climate change, air pollution, and respiratory health. Given the limited discussion on indoor air quality and lifestyle modifications, tailored education and engagement initiatives are essential. Pharmacists, through direct patient counselling, public health campaigns, and policy advocacy are uniquely positioned to bridge this information gap and promote adaptative and health protective behaviours.

Psoriasis patients' perceptions of biosimilars and associated factors

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Introduction: Biological medicines have a significant role in treating psoriasis. Biosimilars are interchangeable and highly similar to their original (reference) products containing the same active pharmaceutical ingredient. Biosimilars are often more affordable, and they are increasingly prescribed or switched by physicians or substituted by pharmacists for non-medical reasons. Patients' perceptions of biosimilars influence the switching and the clinical and economic outcomes of the treatments. Commonly limited knowledge and prejudices about biosimilars may reduce patients' willingness to accept a biosimilar and hinder the safe and smooth switch. The nocebo effect may decrease medication adherence. Patients' perceptions of biosimilars are influenced by multiple factors, including sociodemographic background, medication beliefs, perceptions of generic substitution of chemical medicines, treated disease, and medicines information received. However, the impact of these factors remains insufficiently understood, and they are probably time- and country-specific. A comprehensive understanding of patient perceptions supports the planning and implementation of optimal education for healthcare professionals, the delivery of medical information, and health policy decision-making.

The aim of the study was to investigate psoriasis patients' perceptions of biosimilars and the associated factors.

Method: A cross-sectional survey utilizing statements on a 5-point Likert scale and dichotomous questions aimed at patients aged 18 years or older with plaque psoriasis or psoriatic arthritis. Invitations were sent to University Pharmacy's loyal customers via a digital newsletter and through the communications of the Finnish Psoriasis Association in 2022. The primary outcome was measured by a sum variable representing patients' perceptions of biosimilars (SV1). The SV1 consisted of seven statements rated on a 1–5 scale (5 = most favourable towards biosimilars) and had Cronbach's alfa 0.81. Seventeen background factors were used, including the medicine category used (adalimumab or etanercept biosimilar, original adalimumab and etanercept biological, other original biological, and chemical medicines only), sociodemographics, psoriasis disease, perceptions of generic medicines, and general beliefs about medicines (BMQ-Special Questionnaire). Univariate, bivariate, and multivariate analyses (Generalized Linear Model) were performed.

Results: A total of 219 patients responded. The average score for the perception of biosimilars (SV1) was 3.65 (95%CI: 3.42–3.88). Nearly 80% of the respondents trust in the biosimilar efficacy and safety, and fewer than 5% reported distrust. The physician's role was considered important. Uncertainty regarding biosimilar use in one's treatment was common. According to the multivariate analysis, a favourability toward biosimilars was associated with not using an original biological medicine, hearing biosimilars before the survey, a favourable perception of generic medicines, and considering the use of more affordable biosimilars to reduce societal medical costs important.

Conclusion: Psoriasis patients generally had a favourable perception of biosimilars. However, uncertainty regarding biosimilar use in one's treatment was common. Patients' perceptions were influenced by previous experience with original biologicals, perception of generic medicines, awareness of the biosimilar concept, and concerns about societal medical costs. The results emphasize the need for clear and comprehensive medical information to ensure the safe and rational use of biosimilars.

Association between sufficient medicines information and perceptions of biosimilars among psoriasis patients

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Introduction: Medicines information (MI) can enhance medication adherence, efficacy and safety. The use and switching of biological medicines are becoming more common in treating psoriasis and several other chronic diseases. Many patients using biologicals lack knowledge about these medicines and switching. They often have concerns about the efficacy, safety, and quality of biosimilars, which are interchangeable, highly similar, and more affordable versions of original biologicals. Many patients seek information about biosimilars and switching. However, their specific information needs and the impact of received medicines information are poorly understood. Understanding these factors is important for developing effective medication counselling strategies for both current and future users of biologicals and ensuring the safe and effective use of biosimilars.

The aim of the study was to investigate the association between the perceived sufficiency of medicines information on biological medicines and patients' perceptions of biosimilars among adults with psoriasis (primary research question). Additionally, we investigate the factors influencing this association, the proportion of patients who recognize the concepts of biological medicines and biosimilars, and the sources and additional needs for medicines information.

Method: An electronic cross-sectional survey was conducted among psoriasis patients aged 18 and over. The invitation was sent via an electronic newsletter to University Pharmacy's loyal customers and through the communications of the Psoriasis Association in March 2022. The outcome was measured using a sum variable (SV) representing patients' perceptions of biosimilars. The SV consisted of seven statements rated on a 1–5 scale (5=most favourable toward biosimilars). Sixteen background factors were analyzed, including medication category used (adalimumab or etanercept original products, corresponding biosimilars, other original biologicals, only chemical medicines), sociodemographics, psoriasis disease severity and duration, and general beliefs about medicines (BMQ-Specific Questionnaire). Univariate, bivariate, and multivariate analyses (Generalized Linear Model) were performed.

Results: Biologicals were used by 39% (86/219) of the respondents. Of all respondents, 95% had heard of biological medicines, while 40% had heard of biosimilars. Among the biological medicine users, a positive perception of biosimilars was associated with perceived sufficient medicines information in the multivariate analysis (OR: 1.49; 95%CI: 1.13-1.97; p=0.005). Additionally, having a psoriasis diagnosis for less than five years, using fewer medicines information sources, and considering biosimilars important for controlling medication costs were also associated. Approximately 80% of biological and chemical medicine users reported receiving sufficient medicines information. Among biological medicine users, 40% felt they would have needed additional information. Perceived insufficient medicines information was associated with general concerns about one's medications. Information about biologicals and traditional medicines was most commonly obtained from physicians, package leaflets, pharmacies, and, for biologics, from nurses. The most frequently needed additional information was related to medication side effects and interactions.

Conclusion: Sufficient information about biologicals is associated with a positive perception of biosimilars. However, the concept of biosimilars remains poorly known. Many patients report a need for additional information about biologicals. The results suggest that medicines information plays an important role in ensuring the safe and appropriate use of biosimilars.

Predicting prescription review skills performance using eye-tracking features: A regression analysis with advanced machine learning models

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Background: Eye-tracking technology has recently garnered significant attention in healthcare education, particularly for assessing prescription review skills. Traditional evaluation methods often overlook the nuanced dynamics of visual attention during task performance. Our work fills an existing research gap in objective performance evaluation by incorporating standard eye-tracking metrics and detailed Look Zone features from critical prescription regions. This approach advances our understanding of how visual behavior correlates with clinical competence and contributes to refining educational strategies in pharmacy.

Purpose: The primary objective of this study was to investigate the predictive capability of various eye-tracking features on participants' performance in prescription review tasks. We hypothesized that integrating detailed Look Zone features with baseline eye-tracking metrics would enhance the predictive accuracy of regression models compared to using baseline features alone.

Method: Data were collected from 90 participants performing prescription review tasks. A repeated stratified K-Fold cross-validation strategy ensured balanced dataset partitioning and robust model evaluation. Two feature configurations were utilized: (1) a baseline set comprising standard metrics such as Fixation Count, Fixation Total Duration, Fixation Frequency, Fixation Average Duration, Saccade Count, Saccade Total Duration, Saccade Frequency, Saccade Average Duration, Total Duration, and Fixation Total Time Ratio; and (2) an augmented set that included the Look Zone feature set, capturing detailed fixation behaviors in critical prescription regions (e.g., individual and aggregated fixation metrics, Look Zone Duration Percentage, and Look Zone Count Percentage). Five regression models were implemented: Linear Regression, Decision Tree Regression, Random Forest Regression, Support Vector Regression (SVR), and XGBoost Regression. Model performance was evaluated using mean squared error (MSE) and the coefficient of determination (R^2). SHAP (SHapley Additive exPlanations) analysis further elucidated individual features' contributions and directional impacts on the predictive outcomes.

Results: In the baseline configuration, predictive accuracy varied, with the SVR model achieving an R^2 of nearly 0.88. With the integration of Look Zone features, model performance exhibited notable variations. Linear Regression showed a decline (MSE increased to 1.13330 and R^2 dropped to 0.70965), suggesting limitations in managing high-dimensional data without effective feature selection. In contrast, Decision Tree Regression maintained consistent performance, while Random Forest Regression improved slightly (MSE reduced to 0.69783; R^2 increased to 0.82122). XGBoost Regression proved particularly sensitive to the enriched feature set, capturing complex interactions with marked improvements (MSE reduced to 0.89560; R^2 increased to 0.77055). SHAP analysis revealed that the Look Zone Count Percentage was the most critical predictor among the Look Zone features, significantly positively influencing model outcomes. Baseline features such as Fixation Total Time Ratio and Fixation Count maintained stable predictive power, whereas saccadic measures had limited direct impact.

Conclusion: Our study demonstrates that eye-tracking data, particularly when enriched with detailed Look Zone features, is a powerful predictor of prescription review performance. Integrating advanced regression models—especially SVR and XGBoost—with SHAP-based interpretability establishes a robust framework for evaluating clinical performance in pharmacy education. Future research should explore further optimization of feature selection, model architectures, and broader clinical applications of this approach.

Association of social determinants of health with opioid misuse among individuals with common psychiatric conditions

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Introduction: Opioid use disorder (OUD) has reached epidemic levels in the United States and is strongly associated with psychiatric conditions. Individuals with mental health disorders face an increased risk of opioid misuse due to factors such as inadequate treatment responses, chronic pain management challenges, and socioeconomic vulnerabilities. Despite growing evidence linking social determinants of health (SDOH)—such as income, education, healthcare access, and social support—to substance use behaviors, the specific impact of these factors on opioid misuse among individuals with psychiatric disorders remains underexplored. This study investigates the relationship between SDOH and opioid misuse in individuals with common psychiatric disorders, including depression, bipolar disorder, posttraumatic stress disorder (PTSD), anxiety, and schizophrenia. Additionally, it highlights the need for targeted public health interventions addressing both mental health and opioid misuse.

Methods: This study utilized data from the All of Us Research Program, incorporating survey responses and electronic health records (EHRs) in a retrospective observational cohort design. A total of 49,964 individuals aged 18 and older, representing diverse ethnic and socioeconomic backgrounds, were included. Psychiatric disorders were identified using self-reported survey data and EHR documentation, and opioid misuse was defined using CDC criteria, including both nonmedical opioid use and opioid dependence diagnoses. Logistic regression models identified significant predictors of opioid misuse, while machine learning techniques assessed variable importance.

Results: The study cohort was predominantly white (79.6%), female at birth (71.2%), and heterosexual (95.3%), with an average age of 57.5 years. Among participants, 94.6% had health insurance, but 18.4% reported food insecurity. Depression was the most common psychiatric disorder (77.8%). Logistic regression analysis revealed that bipolar disorder (OR = 1.647), PTSD (OR = 1.442), depression (OR = 1.334), white race (OR = 1.458), food insecurity (OR = 1.437), perceived neighborhood disorder (OR = 1.017), and male sex (OR = 1.394) were significant predictors of opioid misuse ($p < 0.001$ for all variables). Conversely, higher educational attainment (OR = 0.849, $p < 0.001$) and increased income (OR = 0.970, $p < 0.001$) were associated with lower odds of opioid misuse. Other SDOH variables, such as healthcare access and social support, were initially correlated with opioid misuse but lost significance in adjusted models.

Conclusion: This study highlights the role of psychiatric conditions—particularly bipolar disorder, PTSD, and depression—in increasing the risk of opioid misuse. Additionally, socioeconomic factors such as food insecurity and perceived neighborhood disorder contribute to higher opioid misuse rates, underscoring the need for integrated prevention strategies. While certain demographic factors, such as white race and male sex at birth, remained significant predictors, others, such as sexual minority status and health insurance, were not independently associated with opioid misuse after adjustment for confounders. These findings emphasize the necessity of incorporating explicit opioid misuse and OUD screenings into psychiatric care guidelines, particularly for PTSD, bipolar disorder, and depression. Targeted public health interventions addressing both mental health and socioeconomic vulnerabilities could mitigate opioid misuse and improve patient outcomes. Future research should explore longitudinal models and interventional studies to establish causal relationships and optimize prevention strategies.

Longevity: Establishing a policy framework for fostering healthy ageing through lifelong vaccination

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Background: The global ageing trend calls for innovative and proactive approaches to preventive health policies towards healthy ageing. Vaccination is one of the most cost-effective public health interventions, significantly reducing mortality, morbidity, associated disease burden and healthcare expenditures. While vaccines have traditionally focused on the paediatric population, recent advances have led to the development of vaccines for adults, reinforcing the importance of lifelong immunization as a key pillar of healthy ageing.

Purpose: This study aims to identify best international practices in adult vaccination policies and develop evidence-based recommendations to enhance lifelong immunization strategies, using Portugal as a case study. Method: A targeted literature review was conducted to establish the foundation for the study, followed by a multidisciplinary Think Tank approach, consisting of three meetings that gathered 19 participants from the Portuguese healthcare ecosystem, including public health authorities, academia, healthcare professionals, among others. The first meeting addressed the burden of vaccine-preventable diseases, the second examined the social and economic impact of vaccination, and the third discussed the future of adult vaccination in Portugal. The data was collected by the investigators through note-taking. Participants quantitatively ranked the level of priority and impact of each recommendation on a 10-point Likert scale, allowing for a systematic prioritization of policy proposals.

Results: Twenty-one recommendations emerged, emphasizing the urgent need for increased investment in lifelong vaccination. Key areas to be addressed include reformulating the adult vaccination narrative and revising the National Vaccination Program, strengthening health system capacity and community synergies, such as reviewing financing models for vaccination and reinforcing community-based healthcare providers, and ensuring adult population commitment to vaccination through improved communication and infodemiological strategies.

Conclusion: This study provides a comprehensive policy framework to reinforce the position of lifelong immunization as a cornerstone of healthy ageing. While the study focuses on a national case study, its methodology may hold international value for adaptation in other countries, offering a scalable methodology for adaptation across different

healthcare systems to inform policy decisions that optimise preventive healthcare in ageing populations.

Patterns of anti-hypertensive drug utilisation and adherence to hypertension treatment in Lokoja Nigeria

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Background: Hypertension remains a significant public health challenge in Nigeria, contributing to high rates of cardiovascular morbidity and mortality. Despite its prevalence, effective management is often hindered by limited resources, lack of awareness, and sub-optimal adherence to treatment. Understanding patterns of anti-hypertensive drug utilisation and adherence to prescribed regimens is crucial for improving therapeutic outcomes, reducing complications, and guiding health policy in resource-constrained settings like Lokoja. Additionally, investigating these patterns helps to identify gaps in healthcare delivery and shape interventions tailored to local needs.

Objective: This study aims to evaluate the patterns of anti-hypertensive drug utilisation and assess adherence to treatment among hypertensive patients. The findings will provide insights into prescribing trends, patient behaviour, and barriers to optimal hypertension management. By identifying key factors affecting adherence, the study seeks to support the development of targeted interventions to improve blood pressure control and reduce the burden of hypertension-related diseases.

Methods: A descriptive, cross-sectional study was conducted among hypertensive patients attending outpatient clinics through convenience sampling method from November 2024 to February 2025. A total of 80 participants were recruited. Data was collected using structured questionnaires. The questionnaires captured personal, demographic information, clinical history, medication use, and adherence behaviours. Drug utilisation patterns were analysed based on prescribed anti-hypertensive classes and combinations. Adherence was assessed using the Morisky Medication Adherence Scale (MMAS-8), a validated self-reported tool for measuring adherence.

Results: The study included 80 participants with a mean age of 54 years (range: 35 to 74 years) of which 53% were male. A majority of patients 52% were on combination therapy, while 48% used mono-therapy. The most commonly prescribed medications were Dihydropyridine Calcium Channel Blockers 40%, Renin Angiotensin System Inhibitors 30%, and Diuretics 20%.

High adherence was observed in 48% of participants, while 32% exhibited moderate adherence, and 20% had low adherence. The leading causes of non-adherence included forgetfulness 40%, high cost of medications 30% and doubts about the immediate benefits of treatment 15%. Other factors, such as side effects and cultural beliefs about hypertension, also contributed to poor adherence. Patients with higher education levels and those attending regular follow-up visits were significantly more likely to adhere to their treatment regimens. Conversely, individuals with low incomes and limited healthcare access had higher rates of non-adherence.

Conclusion: This study highlights sub-optimal adherence to anti-hypertensive treatment and identifies prevalent prescribing patterns in Lokoja. These findings emphasise the need for multifaceted interventions to address barriers to adherence and improve hypertension management. Strategies such as subsidising medication costs, enhancing patient education, simplified drug regimen, empowerment based counselling involving; motivational interviewing, reflective statements, open ended questions and summary statements are essential to reduce the burden of hypertension. Community-based awareness campaigns and training programs for healthcare providers could also help in improving adherence. These findings show the importance of adopting tailored public health strategies to combat hypertension and its associated complications in resource-limited settings like Lokoja.

Assessment of medication management challenges and technology readiness among visually impaired persons: A cross-sectional survey using a validated IMPACT-VIP questionnaire

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Introduction: Visually impaired persons face medication management challenges due to inaccessible health information and limited assistive technologies. A validated tool is needed to assess their knowledge, attitudes, and practices regarding medication safety.

Objectives: To develop and validate a questionnaire assessing knowledge, attitudes, and practices regarding medication safety and self-medication behaviors among visually impaired persons.

Methods: This study developed a 32-item questionnaire in English, Braille, and Kannada covering health information accessibility, self-administration practices, and QR code usage. Content and face validation were performed by 10 healthcare professionals and 44 participants (mix of general public and visually impaired persons) using Content Validity Index (CVI), Face Validity Index (FVI), and modified kappa statistics (k>0.74), with statistical significance set at p< 0.05.

Results: The 32-item IMPACT-VIP (Investigating Medication Practices, Attitudes, and Challenges in Treatment among Visually Impaired Persons) questionnaire, developed in both English and Braille following the Barile-Lili format, comprised knowledge (12 items), attitude (10 items), and practice (10 items) sections. Validation results demonstrated robust metrics: item-level CVI exceeded 0.79 for all items, with scale-level CVI surpassing 0.80. Expert healthcare professionals rated content validity at 100% (S-CVI/Ave), while general public and VIP reviewers rated at 99%. Internal consistency was strong with modified kappa of 0.74, and face validity showed excellence (S-FVI=99%, ambiguity index=99%). Domain-specific analysis revealed consistently high Universal Agreement (UA=100%) across knowledge items (k=0.82), attitude assessment (k=0.78), and practice evaluation (k=0.76). The probability of chance agreement was negligible (Pc=0.00098), with inter-rater reliability coefficient α=0.92, demonstrating the questionnaire's robust reliability for assessing medication safety behaviors among visually impaired persons in both written and tactile formats.

Conclusions: The IMPACT-VIP questionnaire demonstrated robust validity and reliability metrics, making it a comprehensive tool for evaluating medication safety knowledge, attitudes, and practices among visually impaired persons. Its availability in both English and Braille formats, coupled with strong psychometric properties, ensures its utility for future research and interventions aimed at improving medication safety and healthcare accessibility in this population.

High-impact innovations: Pharmaceutical ecosystems for just sustainability

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Introduction: The global health scenario is marked by volatility, uncertainty, complexity, and ambiguity. Therefore, pharmaceutical ecosystems must address burning issues, wicked problems, and unpredictable health quandaries to secure preferable health futures.

Purpose: The study aims to explore what constitutes high-impact innovations in pharmaceutical ecosystems and under what conditions sustainable, cutting-edge, innovative, and disruptive projects thrive to promote population health and planetary well-being.

Method: The study triangulates data from document analysis and interviews with cross-sector organizational leaders in Nordic countries. We conduct analyses employing institutional and historiographical lenses. We focus on the epistemic (teaching and research), industrial (pharmaceutical firms), market (observed competitiveness of firms), policy (advocacy/lobbying groups), and political power of stakeholders. Furthermore, we attribute relevance to (i) the emerging rationales (why), (ii) the emerging scientific, governance, and market regimes (how), (iii) what pharmaceutical ecosystems do to address just sustainability issues, and (iv) the different stakeholders for whom and through whom sustainable pharmaceutical value/impact is created. Attention is also paid to the constraints, such as the emerging regulatory frameworks and influential political players involved in a constantly changing world of diseases and global health governance for high impact.

Results: High-impact innovations refer to producing avant-garde commercially viable medico-technoscientific and pharmaceutical outputs in resilient and people-centered ecosystems that lead to a paradigm shift in the structural mechanisms for meeting sustainable health needs. The ultimate goal of such ecosystems is to meet current needs at affordable prices, absorb shocks, and respond swiftly and equitably to emergent public health crises with radical inventions while maintaining resilience in a hypercompetitive knowledge-based economy. Complacency amid hyper-competition and disruptions may lead to weak responses (low impact).

Conclusions: Preliminary conclusions challenge our initial understanding of impact. One, non-market and nonpolitical stakeholders lack the power to change policy, resource mobilization, and disbursement in the epistemic field. Two, impact is multifaceted, interwoven, intertwined, experiential, intuitive, historical, partly invisible, and materially configured building blocks that emerge into socially beneficial outcomes over time. High impact requires institutionally coordinated efforts in the above areas to find optimal solutions to health quandaries. At the foundational level, impact is always in the making as experiences (therapeutics and diagnostics, policies, institutions, ideas, and observations) translate into epistemic praxes to produce knowledge forms that challenge current understandings, forms of organizing, policy, and canonized scientific frameworks. As a metaphor, high impact is a tower. The invisible foundational structures create stability and harmony for long-run sustainability. Impact, irrespective of its groundbreaking nature, is never definitive. It consists of building blocks and is invariably a product of the contextual institutional profile.

Policy/scientific implications: For the studied Scandinavian research teams, diversity of ideas, strength of collaborations, and just-in-time funding are the factors that promote high-impact results. Moreover, the activities of policy and advocacy groups prevent adverse outcomes by sustaining the

voice of populations. The quality of epistemic and pedagogical praxes attracts both funding and talent pools to produce new knowledge forms. On the industrial front, impact is not only about commercially viable innovations but also what changes the foundational institutions.

Understanding scope of practice expansion: Pharmacists experience with scope of practice expansions across Canada

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Introduction: Legislative regulatory changes have been implemented and are planned to continue to expand the pharmacist scope of practice in Canada. Canadian health policymakers, provincial governments, regulatory bodies, and pharmacy associations have identified expansions of scope of practice for community pharmacists as an essential tool to alleviate the strain on the health care system, including the workload of primary care professionals. The purpose of this study was to explore community pharmacist perspectives on expansions to scope of practice, including their readiness, willingness, and capacity to assume new roles enabled by legislative changes, and what is required to align with healthcare system needs, stakeholder and patient perspectives.

Methods: This was a qualitative study with community pharmacists in three Canadian provinces; Nova Scotia (NS), Ontario (ON) and British Columbia (BC) at various phases of implementing new scope of practice services. Data were collected through semi-structured virtual interviews between April - December 2024. A piloted, semi-structured interview guide explored pharmacists experiences, including enablers and barriers with implementing new services, including prescribing. Interviews were transcribed and notes from the observations were recorded. Data were coded and analyzed thematically using both inductive and deductive methods. Deductive coding was informed using the 9Ps framework of practice change.

Results: Thirty-six community pharmacists participated (NS n=12, ON n=13, and BC n=11). Themes were identified relating to: (1) patient and societal expectations of pharmacists, (2) shifting professional roles and pharmacist professional identity, (3) education and training and (4) organizational and structural system and practice supports for change. Participants described public misconceptions about pharmacist scope, the challenge of hyper-accessibility, and societal expectations for service delivery as representing a mismatch between expectations and the pharmacist care process. Participants identified prescribing as part of their professional role, largely embracing new scope and described the COVID-19 pandemic as a window that accelerated the pace of change. Many described their role related to new scope in the context of alleviating burden for the healthcare system, other providers and addressing societal need. Participants described the shift to entry-to-practice PharmD as an enabler, with high quality continuous professional development offerings being supports. Participants described system supports required to unify enabled scope with care, including relieving administrative burdens and new remuneration models to support them. Many described challenges with traditional community pharmacy workflow models (e.g., staffing, workflow, and physical spaces) that impact the full scope implementation.

Conclusion: Expansions to pharmacists' scope of practice represents a professional and regulatory change management process. While participants largely identified full scope services as part of their professional role, they provide examples of areas where policy options at system, regulatory and workplace levels are required to ensure the intent of expanded scope legislation on improved population health outcomes and access to care is achieved.

The outcomes of pharmacist-led pharmaceutical care within community pharmacies: An overview of systematic reviews

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Introduction: Community pharmacists' practice has shifted from product-oriented to patient-oriented in recent decades with the goal of achieving the optimal use of medications while enhancing the patient's quality of life. The impact of pharmaceutical care services provided by community pharmacists is yet to be determined.

Objective: This study aimed to summarize the findings from secondary literature on pharmacist-led pharmaceutical care interventions and their impact on clinical, economic, humanistic, and behavioral outcomes of patients attending community pharmacies.

Methods: An overview of systematic reviews, with or without meta-analysis, was conducted using PubMed, Embase, and Cochrane library databases. Articles published up until October 2023 were identified. The following data were extracted: eligible study details, the country in which the study was conducted, year, population, interventions, and resulting outcomes.

Results: Out of 310 publications, 90 full-text articles were evaluated for eligibility, and 29 studies that evaluated the impact of pharmacy services provided within the community pharmacies were selected. The articles covered patients with or without health conditions. Interventions were diverse, focusing on a patient-centered approach, varying between collaborating with other healthcare professionals to achieve desired health outcomes or collaborating with patients through education and counseling and promoting healthier lifestyles. Improving patients' medication adherence and understanding of their conditions resulted in better clinical and behavioral outcomes. While evidence on economic and humanistic outcomes is less conclusive, some studies suggest that these services can lead to cost savings, improved quality of life, and patient satisfaction.

Conclusion: Pharmacy services provided by community pharmacists can lead to an improvement in clinical and behavioral outcomes. While there is some evidence indicating benefits in economic and humanistic outcomes, this evidence is less consistent and should be interpreted cautiously. This umbrella review highlights the importance of further research to strengthen the evidence base and guide the integration of pharmacy services into healthcare systems worldwide, supporting the shift to a patient-centered approach.

Optimizing the benefits and mitigating the adverse effects of international health worker migration: A qualitative analysis of stakeholder perspectives in Nigeria

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Introduction: Health Workers are an integral part of any functioning health system. Over the years, there has been an increasing migration of health workers, especially from Low- and Middle-income countries, such as Nigeria, to developed regions, and these movements have been driven by a quest for further education, higher remuneration, and a general improvement in their quality of lives. Nigeria has been ranked the highest exporter of health worker brains, with resultant reduction in the strength of the health workforce, increase in the workload of the available staff, burnout and low work capacity, low quality of healthcare and poorly achieved health outcomes. However, this study identified the patterns of health worker emigration from Nigeria (2013 -2023), explored approaches for optimizing its benefits and mitigating the adverse effects from multi-disciplinary stakeholders.

Method: This study adopted an exploratory mixed method design, comprising of desk review on migration data and in-depth interview of multidisciplinary stakeholdersin health. Purposive sampling of the major categories of health workers that are affected by migration (nurses, pharmacists, optometrists, radiographers,medical laboratory scientists and medical doctors) was conducted. Hence, the sample consisted of the chief executive officers of the health regulatory agencies and leaders of health professional associations. Desk review data was presented in a graph, while transcripts from the qualitative interview was analysed using the framework approach of thematic analysis. The presentation of the report was guided by the "Standards for Reporting Qualitative Research Checklist"

Results: Figure 1 shows the magnitude and trend of migration among health workers in Nigeria. Regarding the qualitative survey, seventeen (89.5%) males and two (10.5%) females participated in the study, majority (95%) of whom were above fifty years of age. Perspectives from the stakeholders showed that health worker migration is driven by factors inherent in the donor country (push factors) and in the countries of destination(pullfactors). These push factors were economic, workplace conditions, insecurity, limited career growth, infiltration of quackery, inadequate regulation, and inadequate social amenities. The pull factors included higher salaries, better working conditions, job security and welfare benefits, research and training opportunities, political stability and social security. Stakeholders noted the negative impacts of the huge health worker migration and proposed strategies to reduce migration and retain health professionals. These strategies included increase in salary, remuneration and other benefits, improving work conditions, equal career progression among all cadres of health workforce, regular training and professional development, security enhancements, government-led incentives and structured engagement with the colleagues in diaspora.

Conclusion and Recommendation: Nigeria's health worker migration crisis is driven by poor remuneration, lack of career growth, insecurity, and unfavorable work conditions. While migration brings opportunities for global experience, its negative impact on Nigeria's healthcare sector is profound. Unless Nigeria takes urgent and strategic actions, the ongoing health workforce migration will continue to cripple the country's healthcare system. Policymakers must go beyond documentation and implement practical reforms to retain and support health professionals.

Content validity and inter-rater reliability of a classification system for drug-related problems for community pharmacists in Japan

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Introduction: Drug-related problems (DRPs) are associated with increased morbidity and healthcare costs. A validated classification system has become important for identifying and managing DRPs, as well as for documenting pharmacists' interventions and their outcomes in a structured manner. While classification systems have been developed in several countries, none has been validated for the Japanese community pharmacy setting. This study aimed to develop and validate a DRP classification system for Japanese community pharmacists, and to assess its inter-rater reliability to evaluate agreement among reviewers.

Method: A DRP classification system was developed based on the PCNE Classification for Drug-Related Problems V9.1 and a review of the literature. To evaluate the content validity, a modified Delphi study was conducted with 10 experienced pharmacists. This involved two rounds with an online meeting between the rounds. The item-level content validity index (I-CVI) and scale-level content validity index (Ave-CVI) were calculated, with thresholds of I-CVI ≥ 0.8 and Ave-CVI ≥ 0.9 indicating excellent. To assess inter-rater reliability, the 10 experts categorised DRPs included in 31 real-world reported cases using the validated classification system. Inter-rater reliability was measured using the Fleiss' Kappa (κ).

Results: Based on the classification system validated in other countries, an initial DRP classification system was developed with 4 main categories and 62 sub-categories (cause: 38, intervention: 10, acceptance: 4, and outcome: 10). Following a modified Delphi study, a content-validated classification system for DRPs was established with 4 main categories and 52 sub-categories (cause: 31, intervention: 9, acceptance: 4, and outcome: 8). To assess inter-rater reliability, 10 experts classified DRPs identified in the 31 cases. The inter-rater agreement was almost perfect (cause: κ=0.97, intervention: κ=0.86, acceptance: κ=0.82, outcome: κ=0.91) for main categories.

Conclusion: The validated DRP classification system for Japanese community pharmacists was established with high inter-rater reliability. This system enables more consistent identification, classification, and documentation of DRPs in community pharmacy settings, potentially improving patient safety and outcomes.

Pharmacist-led deprescribing interventions for older adults with polypharmacy: A large-scale study of community pharmacy practice in Japan

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Introduction: A new remuneration policy, the Medication Adjustment Support Fee (Adjustment Fee), was introduced by the Ministry of Health, Labour and Welfare in Japan in 2018, to reduce inappropriate polypharmacy based on pharmacists' recommendations following a medication review. Under this Adjustment Fee, pharmacies can receive remuneration when a patient with polypharmacy (defined as ≥6 oral medications prescribed for ≥4 weeks) has ≥2 medications deprescribed (defined as maintaining a reduction for ≥4 weeks). This study aimed to investigate distribution of medications in older adults, medications most frequently deprescribed based on community pharmacists' recommendations under the Adjustment Fee, and factors associated with medication discontinuation.

Method: This retrospective study included 2,069 community pharmacies across Japan. The study period was between April 2020 and September 2023. Older adults aged ≥65 years with polypharmacy who had prescriptions filled at the same pharmacy for at least 60 days were included in analysis. Deprescribed medications were identified using claims data and dispensing records. Multilevel logistic regression with pharmacies as a random effect was used to identify factors associated with medication discontinuation .

Results: This study included 1,458,323 older adults, of whom 19.6% (285,214) had polypharmacy. While 537,884 patients met eligibility for the Adjustment Fee, only 452 claims were made for 437 patients (437/537884, 0.08%) by 213 pharmacies (213/2069, 10%). Of these, 15 patients had two claims (≥ 4 medications deprescribed). The most frequently deprescribed medications, in terms of the number of cases, were rebamipide (41/87561, 0.05%), followed by mecobalamin (39/64476, 0.06%) and magnesium oxide (28/151464, 0.02%). Multilevel logistic regression showed that older age, higher number of medications taken, presence of a family pharmacist, and longer evaluation periods were statistically significantly associated with claiming for the Adjustment Fee (p<0.001 for all).

Conclusion: Although the Adjustment Fee was introduced in 2018 to encourage pharmacists to reduce inappropriate polypharmacy, its uptake remains low. These findings highlight the need for initiatives to overcome barriers and promote wider implementation of pharmacist-led deprescribing interventions.

Metabolic monitoring for adults living with a serious mental illness on a second-generation antipsychotic agent: A scoping review

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Background information: Global consensus and treatment guidelines stipulate the need for regular physical health monitoring for individuals living with severe mental illness on long-term antipsychotics. For instance, the American guideline recommends monitoring metabolic parameters (including weight, waist circumference, blood pressure, plasma glucose and lipid profile) at baseline, 4, 8, and 12 weeks (after antipsychotic initiation) and annually thereafter. Despite these recommendations, metabolic monitoring for individuals living with severe mental illness and using antipsychotics remains suboptimal. A comprehensive understanding of current metabolic monitoring patterns in clinical practice is essential to optimise the management and care for individuals living with severe mental illness.

Purpose: To summarise and map existing metabolic monitoring practices, highlight current gaps in practice and provide directions for future research initiatives.

Method: Database search included: MEDLINE, Embase, CINAHL, the Cochrane Database of Systemic Reviews, APA PsycInfo and Scopus. The target group was adults (aged ≥ 18) diagnosed with severe mental illness (including bipolar disorder, major depressive disorder and psychotic disorders) and taking second-generation antipsychotics. The review identified 20 387 studies (7 579 duplicates), of which 44 studies from 14 countries were included in the final analysis. Studies included in the final analysis were all published in English. The review utilised published studies' descriptions of existing baseline monitoring rates and procedures (that is, without the influence of study interventions) as proxy measures.

Results: Most hospital-based studies did not report on metabolic monitoring practices. Notably, the roles and responsibilities of healthcare professionals in metabolic monitoring for severe mental illness were rarely described, and parameters such as waist circumference and body mass index were generally infrequently measured. Several studies reported the role of health professionals, such as nurses and pharmacists, in the management of cardiometabolic risk, metabolic syndrome and related diseases in severe mental illness. Nurses were often involved in screening and/or physical assessments, while pharmacists had limited involvement in patient metabolic monitoring.

Clinicians and policymakers should note the observed variation in metabolic monitoring practices between settings. At a practice level, clinicians should recognise that patients may not receive regular metabolic monitoring as suggested by existing guidelines. Consideration for the need and potential value of metabolic monitoring should be considered during patient interactions, and if necessary, reviews should be initiated. Policymakers should also facilitate frequent metabolic monitoring within their local settings. This can be achieved through local quality improvement efforts and implementation of mandatory clinical guidelines and policies at an organisational level, which can influence clinical practice. Clinical guidelines and policies must be tailored towards the needs of the particular site and consider other factors including staffing and resourcing requirements.

Conclusion: Currently there is no streamlined approach towards metabolic monitoring for individuals living with severe mental illness. Clearly defining the roles and responsibilities of all healthcare professionals involved is essential to optimising care. In particular, the role of pharmacists in metabolic monitoring should also be further explored. Moreover, there is a need for ongoing research, particularly in the community setting, to promote increased accessibility to metabolic monitoring for severe mental illness.

The overview of orphan drug utilization in Taiwan in 2023

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Background and Objectives: The analysis of the orphan drug utilization is very important for clinicians and rare disease patients. This research analyzed the utilization of orphan drug in Taiwan to provide government the reference for importing medications, physicians for prescribing medications, pharmacists for providing medications.

Methods: In order to let all rare disease patients obtain medication smoothly, the government has even created several regulations related to orphan drugs management such as The Rare Disease and Orphan Drug Act to support the whole administration needs.

For those orphan drugs that already obtain license approval, the PSUR (Periodic Safety Update Reports) is needed to be provided to TFDA every year. For those orphan drugs that without license approval but with special import permit, the hospitals need to provide the utilization evaluation report to MoHW.

Results and Discussion: In 2023, the hospitals reported total 133orphan drugs in utilization. There are 18 orphan drugs with special import permit and used by 248 patients. In 2023, there are 216 utilization evaluation reports collected and the recovery rate is 87.1%. Studying those reports, the adverse events happened in 16 patients (incident rate: 7.4%). Those events include dizziness, diarrhea, Injection site reaction, hypertrichosis, Abnormal gait and etc…

Conclusion: The efficacy and safety of orphan drugs has been closely monitor in Taiwan. The monitor and management has kick off since granting Orphan-Drug Designation, pre-license management, post marketing risk management to efficacy and safety reevaluation.

Waiting times to start treatment with medications for opioid use disorder among US Medicaid Recipients, 1999-2020

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Background: Medicaid is the single largest insurer in the US for individuals with opioid use disorder (OUD). Buprenorphine and methadone are first-line medications for OUD (MOUD) and timely access to MOUD is critical to reduce overdose deaths. However, among persons who receive MOUD, the waiting time to first receipt of MOUD has not been well studied in the Medicaid population.

Purpose: To describe the waiting times between patients' new diagnosis of OUD to their first observed MOUD treatment in the US Medicaid population among people receiving MOUD.

Method: We identified methadone and buprenorphine for OUD treatment in a 100% Medicaid dataset with all age groups in 50 states, DC and territories from 1999 to 2020. We excluded patients dually enrolled in both Medicaid and Medicare, and if age and sex were missing. Patients were included if exposed to methadone or buprenorphine for MOUD. MOUD was defined as either 1) methadone administered at Opioid Treatment Program (OTP), 2) buprenorphine administered at OTP or other opioid treatment settings, or 3) FDA-approved transmucosal buprenorphine/naloxone or long-acting injection of buprenorphine products for OUD treatment dispensed through pharmacies. Methadone and buprenorphine administration was identified by Healthcare Common Procedure Coding System (HCPCS) codes; pharmacy-dispensed buprenorphine products were identified through National Drug Codes (NDC). OUD diagnosis was identified by International Classification of Diseases 9/10 codes. We defined MOUD waiting times as the time between the date of the first OUD diagnosis and the first observed MOUD received afterward. We classified waiting time as <30 days, 31-90 days, 91-183 days, 184-365 days and >365 days and examined the frequency distribution. We also examined waiting time by calendar year and separately for buprenorphine versus methadone users.

Results: 1,492,613 patients had received MOUD after OUD diagnosis from 1999 to 2020. Among those, 62.5% of patients (n=933,106) initiated with buprenorphine. Overall, the median time to receive the first MOUD was 63 days (inter-quartile range: 1-753). Of the 1,492,613 patients who received MOUD after their first OUD diagnosis, 45.0%

received MOUD within 30 days, 7.6% within 31-90 days, 5.8% between 91-183 days, 7.2% between 184-365 days, and 34.3% after more than 365 days. Waiting times decreased over calendar years. For methadone initiators, waiting times decreased from a median of 1,205 days (12-3,042) in 1999-2009 to 8 days (0-506) in 2010-2014 and further to 3 days (0-168) in 2015-2020. For buprenorphine initiators, waiting times decreased from a median of 1,605 days (230-3,328) in 1999-2009 to 169 days (10-1,035) in 2010-2014 and to 32 days (2-344) in 2015-2020.

Conclusion: For Medicaid recipients who initiate MOUD, waiting times have substantially decreased over the years, though wide variation still persists in recent years. Although nearly two-thirds of OUD patients received with buprenorphine as their first MOUD, time from OUD diagnosis to first receipt of MOUD was shorter for methadone users. Further study is warranted to investigate barriers for patients to timely receive MOUD.

Chemotherapy access in a resource-limited setting: A cross-sectional analysis of availability and gaps at Malawi's National Cancer Centre

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Background: Cancer mortality in sub-Saharan Africa (SSA) ranks among the highest globally, largely due to limited access to diagnostic and treatment services. Chemotherapy and surgery remain key pillars of cancer treatment; however, chemotherapy the cornerstone of systemic cancer therapy faces significant accessibility challenges in SSA, including Malawi. Despite its inclusion in Malawi's National Essential Medicines List (MEML), chemotherapy availability is frequently hampered by inconsistent supply chains and resource constraints. The national supply chain depends heavily on the Central Medical Stores Trust (CMST) to supply public hospitals, with private and donor support only stepping in when CMST encounters stock disruptions. Additionally, little is known about the alignment of chemotherapy availability at Malawi's oncology centres with international standards, such as the World Health Organization (WHO) Model List of Essential Medicines. Purpose: To evaluate the availability and accessibility of chemotherapy agents at Malawi's National Cancer Centre (NCC).

Methods: A descriptive cross-sectional study was conducted at Malawi's NCC in Lilongwe. Data were collected in September 2024 through a retrospective review of stock records from August 2022 to August 2024. Chemotherapy availability was assessed against both the MEML and the August 2023 WHO Model List of Essential Medicines. Stock levels were classified as "Understocked" (quantities below one month's consumption), "Stocked according to plan" (quantities sufficient for one to two months), or "Stock out" (zero stock). Data sources included stock cards and procurement records. Descriptive statistics were used to analyze the data.

Results: Of the 36 chemotherapy agents listed on the MEML, only 19 (53%) were available at the NCC. Of these, 12 (63%) were consistently stocked according to plan over the two-year period, while 7 (37%) were understocked. The remaining 17 agents (47%) experienced stock-outs. Against the WHO's recommended list of 58 essential chemotherapy agents, only 19 (33%) were available at the NCC. These mostly included older, lower-cost agents such as cyclophosphamide, methotrexate, vincristine, and doxorubicin. Stock-outs were notably common for high-cost targeted therapies and monoclonal antibodies, including trastuzumab and bevacizumab. For WHO-recommended agents, 7 (12%) were understocked, 12 (21%) were consistently stocked according to plan, and 39 (67%) experienced stock-outs during the study period. Contributing factors included procurement delays, supply chain inefficiencies within CMST, and reliance on donor programs and external suppliers.

Conclusion: Chemotherapy availability at Malawi's NCC falls short of WHO recommendations, restricting access to guideline-based cancer care. These findings underscore significant gaps in access to modern therapies and highlight the urgent need to enhance procurement processes, strengthen supply chain management, and invest in oncology services. Sustainable partnerships and donor engagement will be critical to integrating high-cost biologics into Malawi's cancer treatment landscape, contributing to improved cancer outcomes in Malawi and other resource-limited SSA settings.

Sustainable capacity building for antimicrobial stewardship (AMS): Training pharmacists and AMS team members as leads across referral and district hospitals in Malawi

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Introduction: Antibiotics have significantly improved global health outcomes; however, their misuse and overuse have contributed to the rise of antimicrobial resistance (AMR), a growing global health threat. Low- and middle-income countries (LMICs), such as Malawi, bear a disproportionate burden of AMR due to gaps in healthcare provider (HCP) education and insufficient antimicrobial stewardship (AMS) practices. In Malawi, a knowledge gap among healthcare workers and limited evidence on effective AMS training contribute to the challenge of AMR management. This study aimed to increase the number of AMS lead pharmacists and AMS team champions across four central hospitals and three district hospitals in Malawi using a "Train-the-Trainer" model. Purpose: This study aimed to strengthen AMS capacity in Malawi by training pharmacists and AMS team members across four central and three district hospitals using a "Train-the-Trainer" model. The goal was to equip practitioners with the knowledge and resources to enhance antimicrobial stewardship practices and cascade training within their institutions.

Methods: This was a 12-month multi-site exploratory mixed-methods study that involved seven hospitals: All four referral (Tertiary level) hospitals across Malawi and Three district (secondary level) hospitals. A team of nine members revised the Commonwealth Partnerships for Antimicrobial Stewardship (CwPAMS) 1.5 AMS toolkit, and tailored it to Malawi's healthcare landscape, incorporating national resistance data and locally available antibiotics. Focus group discussions (FGDs) with key stakeholders (pharmacists, doctors, nurses, Lab scientists, and administrators) and a needs assessment identified gaps in knowledge, practices, and resources. A Global Point Prevalence Survey (GPPS) assessed antimicrobial use, while FGDs further explored prescribing behaviours and barriers to AMS implementation. The training content, reviewed by the Fleming Fund and Malawi's Antimicrobial Resistance National Coordinating Committee (AMRNCC), included AMS fundamentals, antibiotic knowledge, and case studies. Pre- and post-training assessments measured knowledge gains, and trained AMS leads cascaded the training to multidisciplinary teams at their respective facilities, using Knowledge Attitude and Practice (KAP) surveys to evaluate outcomes. Descriptive statistics were used to analyse the data. Data visualization techniques were applied to summarize the findings

Results: The project successfully trained 646 healthcare workers, surpassing the target of 420 by 53%, with 97% of participants finding the training relevant to their practice. Among participants,84% reported that the AMS toolkit was clear and easy to use and 92% percent felt it would support their daily practice. FGDs highlighted key challenges, including diagnostic tools, pressure from patients and colleagues to prescribe antibiotics, and the need for standardized AMS guidelines.

Conclusion: This AMS strengthening initiative demonstrated the effectiveness of a Train-the-Trainer model in improving antimicrobial use practices in Malawi. By addressing healthcare provider knowledge gaps and integrating local data, the revised AMS toolkit and training program have contributed to sustainable AMS implementation. Future efforts should focus on continuous evaluation, policy integration, and expanding AMS training to additional healthcare facilities across Malawi.

An international review of medication-related health services in correctional settings: A bibliometric analysis comparing medication-related health services and pharmacy-specific research.

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Background: People within correctional systems exhibit higher rates of psychiatric and mental illness, substance abuse, and chronic infections than the general population (Howard, 2021, Personal Ment Health). While inter-professional care is routine, pharmacists' roles remain poorly defined. As medication safety experts, pharmacists' practice scope in correctional health must evolve to meet healthcare needs of vulnerable prison populations.

Purpose: The purpose of this study is to review global trends in medication-related health research within correctional centres and compare pharmacy-specific research in this setting. This comparison will allow identification of new scopes of practice for pharmacists and avenues for improved quality use of medicines within the corrective health systems.

Method: A bibliometric review was conducted in the Scopus database (largest medical journal repository) using a detailed search strategy for correctional centres, inmates and/or medicines terms for the period of 2020 to 2025. Subsequently, pharmacist terms were included to identify pharmacy-related research. Reviews, commentaries, and papers unrelated to people in active prison settings were excluded. Healthcare services were categorised to specific medical conditions using WHO's International Classification for Diseases 11. Bibliometric performance metrics were analysed in Excel.

Results: A total of 3002 papers were initially identified and after review, 867 papers (29%) were included as medication-related health services within international corrective settings. Pharmacist-specific corrective health research was significantly lower with only 12 out of 42 papers included for analysis.

The number of publications in corrective health remained consistent across the last five years (189, 160, 138, 137, 206 and 37 publications for 2020-2025 respectively). Comparatively, pharmacist involvement was low (2, 2, 3, 3, 1, 1) publications from 2020-2025). Research in corrective health is present in all regions of the world. The top five regions conducting in correctional health research were North America (USA, Canada, 375/867), Europe (193/867), UK (86/867), Australia (55/867) and South America (37/867). Whereas pharmacy-related research only originates from North America (USA, Canada 5/12), Europe (2/12), UK (1/12), Australia (2/12), South America (2/12).

The most common area of medication-related health research occurred in mental health, behavioural or neurodevelopmental disorders (ICD11-06). Substance use and addiction, psychiatric conditions and mental health were described in 417/867, 170/867 and 131/867 papers, respectively. Infectious diseases were the second most common medication-related health service with blood-borne viruses (Hepatitis B, Hepatitis C and HIV) and respiratory pathogens (TB, COVID) equally in 168/867 of papers. Chronic health conditions were infrequently researched with only 47/867 publications including services for cardiovascular or endocrine conditions.

Comparatively, chronic health management was more frequently the primary aim of pharmacy-specific research occurring in 5/12 of publications. Substance use, psychiatric and infectious diseases (blood borne viruses) were less frequently represented in 3/12, 1/12 and 2/12 pharmacy-related publications.

Conclusion: This study is evident that there is a gap in literature regarding pharmacist's practice in the maintenance of chronic health conditions as well as more complex neurological conditions in correctional centres. Pharmacists have existing leadership within hospital and community healthcare programs to manage medications within these areas.

Early intervention to support healthy ageing and ongoing management of chronic conditions: integrating pharmacists into general practices in Australia

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Background: The role of pharmacists within primary care is evolving in Australia, with emerging opportunities for their integration into general practice settings. The Western Australian Primary Health Alliance (WAPHA) and the Pharmaceutical Society of Australia (PSA) collaborated on a groundbreaking project, "Early intervention to support healthy ageing and ongoing management of chronic conditions". This initiative sought to address the growing burden of chronic diseases and support healthy ageing through pharmacist-led interventions in general practices. For the purposes of this project, older adults were defined as individuals aged 65 years and older or 50 years and older for Aboriginal or Torres Strait Islander patients.

Purpose: The primary aim of this project was to assess the impact of pharmacist-led comprehensive medication management reviews on patients' health-related quality of life. The study evaluated the potential benefits of this model by using the EQ-5D-5L quality of life survey before and after pharmacist consultations.

Method: Pharmacists were embedded into general practices and conducted comprehensive medication management reviews for patients. During the initial consultation, patients completed the EQ-5D-5L survey, which measures quality of life across five domains: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression, and combines these ratings into an overall EQ-5D-5L Index score. A visual analog scale (VAS) was also used to capture patients' perceived health status on a scale of 0 to 100. Pharmacists followed up with patients via telephone 4–12 weeks after the consultation and conducted the EQ-5D-5L survey again. Preliminary results were analysed from 395 patients who completed both surveys.

Results: Improvements were noted across all five domains of the EQ-5D-5L survey following pharmacist intervention:

EQ-5D-5L Index score: a total of 51.9% of patients recorded an improvement pre-to-post intervention, 34.2% were unchanged, and 13.9% experiencing a decline.

Mobility: 28.1% improved, 58.5% unchanged, 13.4% experienced a decline.

Self-care: 13.2% improved, 80.8% unchanged, 6.1% experienced a decline.

Usual activities: 25.3% improved, 53.7% unchanged, 21.0% experienced a decline.

Pain/Discomfort: 35.2% improved, 47.6% unchanged, 17.2% experienced a decline.

Anxiety/Depression: 29.9% improved, 57.7% unchanged, 12.4% experienced a decline.

On the VAS, 30.1% of patients improved in their perceived health ratings pre-to-post intervention, 53.2% were unchanged, and 16.7% declined. While 16.7% of patients experienced a decline in their EQ-VAS ratings, further analysis indicates that for most of these patients, this was not accompanied by a corresponding decrease in their EQ-5D-5L Index score. This suggests that their self-perceived overall health worsened, despite stability in their measured health status across the five EQ-5D dimensions and highlights potential differences in how individuals perceive and rate their overall health (VAS) compared to their health status as captured by the EQ-5D-5L dimensions. These findings highlight the promising impact of pharmacist-led interventions, even after a single interaction.

Conclusion: Integrating pharmacists into general practices provides an innovative model for addressing chronic conditions and enhancing patient care in Australia. The preliminary results demonstrate meaningful improvements in quality-of-life measures across key domains, underscoring the potential for this role to support healthy ageing and chronic disease management.

The integration of human narratives into pharmaceutical policy decision-making: Best practices of citizen engagement in the Western Pacific WHO region

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Background: Citizen engagement (CE) is key to successful evidence-based pharmaceutical-policy decision-making. By complementing explicit knowledge, tacit knowledge brings citizens' lived experiences, views and perspectives to decision-making. CE has been shown to enhance health policies' effectiveness, legitimacy and relevance, strengthening the democratic process and public trust in regulatory agencies. Uncovering how CE can be best incorporated and identifying best practices globally can help orient future pharmaceutical-policy decision-making processes. The Western Pacific Region (WPRO) of the World Health Organization (WHO) is a diverse set of 37 member states with vast differences in health outcomes and challenges.

Purpose: As the WHO highlights the importance of integrating citizens' input into decision-making processes, this study aimed to identify best CE practices and policies across the pharmaceutical value chain in the WPRO region.

Method: To identify CE practices, a scoping review of grey and peer-reviewed scientific literature was conducted. A theoretical analysis was performed using an evaluation model drafted by Gail Motsi (2009), recommended by the WHO, to assess best practices in each step of pharmaceutical decision-making. Semi-structured interviews were conducted with stakeholders from Australia, Singapore, and Malaysia involved in CE practices in pharmaceutical policy decision-making. A thematic analysis of the transcripts was conducted using NVIVO 14.

Results: CE practices occurred at varying levels in different steps of the pharmaceutical policy decision-making process. A total of 46 CE practices and policies were found, 23 of which within reimbursement and cost-effectiveness assessment procedures, mainly in countries like Australia and New Zealand, with robust frameworks and legislations emphasizing CE. Best practices of CE included public consultations and creation of task forces in Hong Kong gathering views on regulatory frameworks for advanced therapy products; New Zealand's extensive deliberative process to reformulate their coverage priority setting system; and Singapore's Consumer Engagement & Education team set up to support CE in HTA and pricing assessments. The thematic analysis of interviews highlighted good practices such as adapting CE to the cultural context; supporting and mentoring citizens to achieve meaningful engagement; co-designing and co-developing CE practices with citizens; the importance of mutual respect between decision-makers and citizens; and the availability of international guidelines to model new CE practices. Key challenges identified included CE being a resource-intensive process; the need for training, educating, and mentoring citizens to a high extent; and cultural barriers preventing implementation of meaningful practices.

Conclusion: This study emphasises the importance of investigating region-specific CE practices to obtain context relevance. The best practices identified can be used as models to integrate more meaningful CE across the WPRO. Future direction includes conducting stakeholder interviews with other key member states, including New Zealand, Japan, and Hong Kong, to investigate them as case studies and further help orient pharmaceutical policy decision-making in the WPRO. This study is part of a project commissioned by the WHO to identify CE best practices globally, and will be integrated in a report of recommendations to guide not only region-specific but also global adoption of CE in pharmaceutical policy decision-making.

Impact of an interprofessional preventive care–focused education programme on formerly incarcerated individuals' trust in the health care system

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Introduction: This study's objective is to evaluate the impact of an interprofessional health education programme on formerly incarcerated individuals' trust in the healthcare system. It is well-documented that individuals with histories of incarceration do not trust the healthcare system when compared to the general population. Considering the disproportionately high incidence of chronic conditions in the population of formerly incarcerated individuals (clients), this is a pressing issue. However, research evaluating initiatives that can help improve this perception is lacking. Previous attempts at measuring trust in different demographics have utilised a Group-Based Medical Scale (GBMMS). The assessment involves evaluating statements related to subjects' experiences based on a five-point Likert scale of strongly disagree to strongly agree. For this study, a modified 12-question GBMMS for people with criminal backgrounds was used. Additionally, collaborations were developed among student pharmacists, medical students, and a non-profit re-entry organisation dedicated to assisting clients in adjusting to post-incarceration life. Through this interdisciplinary partnership, and with re-entry programme assistance, community outreach education sessions were provided to investigate the potential impact on clients' perceptions of and trust in the healthcare system.

Method: Hour-long, weekly health education presentations on chronic conditions and immunisations were provided to clients at the re-entry facility by an interprofessional team of third and fourth professional year medical students (M3/M4) and student pharmacists (P3/P4). Clients attended an educational session consisting of a 45-minute presentation with a 15-minute question-and-answer session. Clients anonymously completed a paper-based GBMMS survey with eight multiple choice demographic questions and one question assessing likelihood of seeing a healthcare provider (pre-survey) before and GBMMS survey with one likelihood of seeing a healthcare provider question (post-survey) after the session. Anonymous and randomised subject numbers correlated pre- and post-surveys to allow for individual comparisons.

Results: A total of 270 attended the training sessions. Of those, 117 (43.3%) clients completed both pre- and post-surveys. Five clients completed only the pre-survey. Notable results include improvements in self-reported perceptions regarding healthcare providers having the best interests of people with a criminal history (31%), treatment of people with criminal backgrounds compared to people of other groups (22.5%), and sometimes hiding information from patients with a criminal history (21.4%). Additionally, 25.7% of respondents reported improvements in the perceived level of care for people with criminal backgrounds in most hospitals. Twenty-four percent of respondents also had improved perceptions when asked if people with criminal backgrounds should not confide in healthcare providers because it will be used against them. Interestingly, 21.4% had a worsened outlook when asked if they needed to be more suspicious of healthcare workers.

Conclusion: Overall, a brief, 1-hour interprofessional education programme on preventive medicine resulted in a positive impact on formerly incarcerated individuals' perceptions of trust in the healthcare system.

Transforming health through performance, collaboration, and oncology pharmacy leadership

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Introduction: The increasing complexity of oncology therapeutics demands innovative approaches to ensure optimal patient outcomes, safety, and cost-effectiveness. Clinical oncology pharmacists play a critical role in driving performance, fostering collaboration, and transforming healthcare systems. Their leadership is pivotal in achieving excellence in oncology pharmacy practice through medically integrated dispensaries (MIDs), clinical research integration, and operational advancements.

Method: A structured approach was undertaken by clinical oncology pharmacists to implement MIDs and integrate clinical research programmes across oncology care settings. This involved the development of standardised policies, interdisciplinary collaborations, and streamlined workflows to optimise treatment delivery and expand access to novel therapies. Operational initiatives, including advanced scheduling systems, inventory management, and compliance with USP 797/800 standards, were employed to enhance safety and efficiency. Financial stewardship strategies, such as formulary reviews and leveraging group purchasing organisation (GPO) agreements, were also implemented to balance cost containment with quality care.

Results: The establishment of MIDs resulted in improved medication adherence and reduced treatment delays, contributing to enhanced patient satisfaction. Clinical

research integration provided patients with access to innovative therapies, ensuring rigorous safety and efficacy monitoring. Financial stewardship efforts achieved significant cost savings through biosimilar adoption and effective contract negotiations, reducing financial toxicity for patients. Operational initiatives led to improved efficiency, with advanced scheduling reducing turnaround times and inventory management ensuring the availability of critical medications. Compliance with USP standards further bolstered safety and quality in oncology care delivery.

Conclusion: The role of clinical oncology pharmacists is indispensable in advancing performance, collaboration, and health transformation within oncology pharmacy practice. Through innovative care models, interdisciplinary partnerships, and a commitment to operational excellence, they have successfully enhanced patient outcomes, improved treatment safety, and ensured financial sustainability. These findings underscore the vital contributions of clinical oncology pharmacists in shaping the future of cancer care and align with the conference theme of Performance, Collaboration, and Health Transformation. Attendees will gain actionable insights and scalable strategies to replicate these successes in diverse healthcare settings.

A study on factors influencing risk management among personnel at Yang Chum Noi Hospital, Sisaket province

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Introduction: Yang Chum Noi Hospital has a Risk Management Committee that operates in accordance with risk management guidelines. The hospital has integrated an information system with the existing system, resulting in a decrease in reported risk incidents within the original system, with no new reports recorded. However, there are still unresolved incidents despite proactive and reactive monitoring by the team.

Therefore, this study was conducted to develop a risk management system and establish a collaborative approach with the Pharmacy and Therapeutics Committee (PTC) to enhance medication risk management.

Method: The objective of this study is to examine the factors influencing risk management among personnel at Yang Chum Noi Hospital. This is a descriptive research study utilising interviews and surveys to assess the factors affecting risk management among hospital staff. Data collection was conducted between June and July 2020.

Result: Study Findings on Factors Influencing Risk Management

The study found that education level had a positive correlation with attitudes towards risk management, particularly in terms of knowledge and understanding, behaviour, risk identification, risk management, and risk assessment, with statistical significance.

The majority of personnel demonstrated a good understanding of risk management. Their attitudinal behaviour towards risk management was at a moderate to high level, with mean scores of 3.30 and 3.507, respectively. In terms of practical implementation, personnel exhibited a high level of engagement in risk identification, risk analysis, and risk management, while risk assessment was at a moderate level, with mean scores of 3.58, 3.45, 3.47, and 3.38, respectively.

Regarding the Pharmacy and Therapeutics Committee (PTC), the findings indicated that PTC members were aware of their roles and responsibilities and recognised the alignment of medication risk management with the hospital's overall risk management system. They also acknowledged that pharmacists play a crucial role in all aspects of medication risk management, including identification, management, analysis, and risk review.

Conclusion: The majority of personnel understand the processes and procedures of the HRMS system and recognise that HRMS helps establish a structured approach to risk management. However, the reporting behaviour within the system remains low, and many do not perceive risk management as a priority.

The Pharmacy and Therapeutics Committee (PTC) is aware of its role in medication risk management and ensures that its risk management practices align with the hospital-wide risk management framework. Pharmacists were found to play a crucial role in all aspects of medication risk management.

Key challenges include lack of continuity in monitoring and inadequate communication and coordination. Addressing these issues will serve as a foundation for improving the medication risk management system moving forward.

Collection of patient-reported outcomes in the real-world setting: Insights from registries indexed in the heads of medicines agencies-European Medicines Agency catalogues of real-world data sources

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Background: Patient-reported outcomes (PROs) capture patients' direct experiences without the influence of healthcare professionals. They can be obtained through validated instruments, such as questionnaires or scales,

referred to as Patient-Reported Outcome Measures (PROMs). While PROs are often collected in clinical trials, their inclusion in real-world settings, such as registries, has been encouraged, as reflected in the European Medicines Agency (EMA) "Guideline on Registry-Based Studies". However, challenges related to their systematic collection in real-world settings persist, mainly due to a lack of infrastructure and resources.

Purpose: This study aims to explore PRO collection in registries indexed in the Heads of Medicines Agencies - European Medicines Agency Catalogue of real-world data sources (HMA-EMA RWD Catalogues).

Methods: Registries were retrieved from the HMA-EMA RWD Catalogue and filtered by "Data source type" to include only registries. Categorical and numerical variables of interest were defined, including PRO collection, care setting, number of countries covered, population size, median observation time (in years), financial source(s), and data source qualification. Descriptive statistics were conducted in R, including Fisher's exact test, Pearson's chi-squared test, and Wilcoxon rank sum test to assess significant differences between registries collecting and not collecting PROs.

Results: Of the 102 registries analysed, 50 (49%) reported collecting PROs. Most registries collecting PROs were disease-specific (38; 76%), privately funded (29; 60%), implemented in secondary care settings (26; 58%), not formally qualified as data sources (44; 88%), and had a median observation time of 5 (1–26) years. Significant differences ($p<0.05$) were observed between registries collecting and not collecting PROs: PRO-collecting registries were more often privately funded and had an average population size approximately seven times smaller than those not collecting PROs.

Conclusion: This study highlights a growing recognition of the role of PROs in registries, with half of the examined registries collecting PROs. These data, which reflect patient experiences and outcomes in real-world settings, are essential for supporting patient-centred decision-making. Further research should address challenges such as registry qualification, data quality, and logistical issues to optimise PRO inclusion, where pharmacists could play a crucial role.

MiniMed App

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MiniMed APP Goal of the App: The app is designed to assist pharmacists by providing quick access to relevant information for over-the-counter medicines when scanned, facilitating patient guidance without interrupting workflow. Additionally, it will suggest OTC medications that can help manage side effects of prescribed treatments, improving patient quality of life and increasing pharmacy revenue.

Core Functionality: Database Integration with Barcode:

Each medicine is linked to a unique barcode in the database. When scanned, the app retrieves all associated information, excluding the barcode itself.

Pop-up Window Display: When a recognized item is scanned, a small, focused message box appears, showing only the essential details without opening the full app window. The box will disappear after 5 seconds if the user did not interact with it. The app stays minimized in the taskbar or system tray area, and users can reopen the full app window by clicking on the app icon in the taskbar.

Search Functionality: Search by Item Number:

Allows users to locate a specific medicine using the item number. Search by Medicine Name: Users can search with partial names, and possible matches appear in a list with the searched term highlighted in light green. Clicking an item opens a detailed view, while the list remains visible for further browsing.

Enhanced Search by Keywords and Text: All entered data fields are searchable, including keywords, dosage, and usage. Partial text matches generate a list of results with highlighted keywords, allowing for efficient browsing.

Silence for Unregistered Products: If a scanned product is not in the database, the program remains silent without any reaction, avoiding interruptions.

Source Link for Each Medicine: Each medicine entry ends with a clickable "More" link that opens a source webpage, allowing pharmacists to verify or view additional information.

User Experience and Interface: Auto-Fill and Suggestions: Auto-suggestions activate as users type in search fields, simplifying searches with partial information.

Clear, Simple Interface: A clean, minimalist design groups related details (e.g., dosage, mechanism, side effects) into expandable sections, preventing clutter.

Responsive Design: The app interface adapts to different screen sizes (e.g., desktops, tablets), offering flexibility.

Data Security and Permissions:Data Security: The database file should be protected, ideally encrypted, to prevent unauthorized modifications.

Admin-Only Modification Access: Data modifications (adding, changing, or deleting records) are limited to the developer (admin), preventing unauthorized edits.

Remote Online Updating: Admins can remotely add, change, or delete data, updating all app installations to ensure users have the latest information.

Notifications for Updates: The app will notify users when new or updated information is added to the database, helping users stay current.

Organized Information Display: Detailed Medicine Information Layout: Basic Info: Name, size, form, item number (displayed next to the medicine name in the header).

Purpose: Usage and mechanism of action.

Dosage: Adult and child dosage.

Warnings: Contraindications, side effects, and storage instructions.

Source Link: Each entry concludes with a clickable "More" link that directs to the source webpage.

Note: The app is in its final development phase, with most features functioning effectively.

Evaluating West African HIV/AIDS policies: Inclusion of pharmacists, men who have sex with men, and transgender individuals in national strategic plan development and implementation

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Introduction: Pharmacists play a crucial role in policy drafting by applying their expertise in medication management, access, distribution, and adherence support—key components in HIV/AIDS management. Evidence from West African countries indicates that Men who have Sex with Men (MSM) and transgender individuals are disproportionately affected by the HIV epidemic. However, many West African nations have criminalized Lesbian, Gay, Bisexual, Transgender and Queer (LGBTQ) communities, imposing various legal punishments. To effectively combat the HIV epidemic among key populations, it is essential to include pharmacists and representatives of these communities in HIV/AIDS policy development. This study aimed to investigate the extent to which pharmacists, MSM, and transgender individuals are included in the formulation of HIV/AIDS National Strategic Plans (NSPs) across West African countries.

Method: This study was a policy review of NSPs of 14 West African countries. It assessed key indicators based on the WHO Consolidated Guidelines on HIV, Viral Hepatitis, and STI Prevention, Diagnosis, Treatment, and Care for Key Populations and the UNAIDS Global AIDS Strategy 2021-2026 (End Inequalities, End AIDS). Four indicators used were Recognition of MSM and transgender community as key population, mention of data on MSM and transgender community including prevalence and population size, providing HIV-related intervention for MSM and transgender individuals and the extent of involvement of MSM and transgender individuals in the formulation of NSPs. A qualitative content analysis of the NSPs was conducted for terms such as "Pharmacy," "Pharmacist," "Druggist," "Drug Expert," and "Medication Expert" to assess the inclusion of pharmacists in policy formulation.

Results: The study revealed that only 42.9% (6 out of 14 West African countries) involved pharmacists in the formulation of HIV/AIDS NSP. 85.7% (12 out of 14 countries) recognized MSM as key population while 28.6% (4 out of 14 countries) recognized transgender individuals. 62.3% of these countries had HIV-related interventions tailored to MSM and 28.6% had interventions for transgender individuals. 42.9% included HIV Pre-exposure Prophylaxis (PrEP) and Post-exposure Prophylaxis (PEP) as part of the interventions towards MSM and transgender individuals. However, only 50% of the countries involved MSM community in the formulation of NSPs while 21.4% involved transgender community in development of their NSPs.

Conclusion: There's poor inclusion of pharmacists, MSM and transgender individuals in the formulation of NSPs in West Africa. Men who have Sex with Men and Transgender individuals lacked proper HIV-tailored intervention programs to curb the spread of HIV among key population. There is low psycho-social support and gender affirming care towards the study population. There's also need for review of punitive laws that inhibits Key populations from accessing quality HIV care

Medicines accessibility through a reimbursement model in a national health service

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Background Information: Medicines accessibility is a critical challenge for healthcare systems, as lack of equitable access to medicines can significantly impact public health. Systems where medicines are provided by the government through tax funded programs may struggle with sustainability, access to newer medicines, and consistent access to the same brand of medicines. A reimbursement model could address these issues while empowering patients. This study explores the potential of a reimbursement system to improve medicines accessibility in a country with a small market.

Purpose: The aim of this study is to develop a reimbursement model applicable to countries with small markets. The objectives are: (i) to identify and review international drug reimbursement policies, (ii) to analyse the strengths, weaknesses, opportunities, and threats (SWOT) associated with implementing a reimbursement model in countries with a small market, and (iii) to propose and validate a reimbursement policy.

Method: An extensive literature review was conducted to gather information on international drug reimbursement policies. The data collected was used to design guidelines for two focus groups: one investigating views on which reimbursement policy and methodology is suitable for small market countries, taking into consideration recent advances such as personalised and innovative medicine (Focus Group A) and the other taking into consideration barriers to medicines accessibility and ethical aspects (Focus Group B). These guidelines were validated by seven pharmacists. A linguistic expert was consulted to ensure face validity. Focus Group A consisted of experts from six different pharmaceutical stakeholder entities, and Focus Group B consisted of participants from six patient representative groups. The data collected underwent political, economic, social, technological, legal, and environmental (PESTLE) and SWOT analyses. Analysis results were used to design a reimbursement policy, which is validated through Focus Group C, consisting of experts from pharmaceutical stakeholder entities.

Results: The results showed that the introduction of a reimbursement system is beneficial in reducing wastage, improving patient satisfaction, and increasing sustainability compared to a government formulary system. However, respondents in Focus Group A (N=10) indicated that patients might have a negative response to transitioning from a government formulary system to a reimbursement system (n=8). Focus Group B (N=6) emphasized the importance of preventing shortages, as this can have the highest negative impact. For example, ADHD patients may require access to specialised medicines, with some patients expressing willingness to pay extra for this access. Additionally, both focus groups identified that clear communication and education about a potential reimbursement system is essential to mitigate resistance and ensure smooth implementation.

Conclusion: The study found that implementing a reimbursement model in a country with a small market faces multiple barriers, both politically and from patients, especially when transitioning from a government formulary system. Education and communication about the reimbursement system will be paramount to its success. Pilot studies are recommended to evaluate patient response, equity, sustainability, and how the reimbursement model would interact with a pricing authority. These studies will help refine the model and address any potential issues before full implementation.

Abortion medication availability in community pharmacies when mifepristone is regulated as a normally prescribed medication: a mystery caller study

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Introduction: Under a globally unprecedented model, the mifepristone-misoprostol medication abortion regimen became available in Canada as a normally prescribed medication, without restrictions, in 2018. Despite rapid uptake by prescribers, patients report difficulty accessing this time-sensitive medication. The purpose of this study was to quantify mifepristone-misoprostol availability within three calendar days at community pharmacies across the province of British Columbia (BC), Canada.

Method: Using a mystery-caller method, we contacted all community pharmacies in British Columbia, Canada posing as patients looking to fill a mifepristone prescription (July – August 2024). We requested referrals from non-dispensing pharmacies and cross-referenced availability among referral pharmacies. Using road network analysis, we estimated: the proportion of reproductive-aged (15-49 years) females who reside within 15-minute walking, 15-, 30- and 60-minute driving times of a mifepristone-dispensing pharmacy and the proportion of pharmacies that dispensed mifepristone.

Results: We contacted 98.5% of pharmacies in BC (n=1460). Two thirds (66%) could dispense mifepristone within three days. Among non-dispensing pharmacies (n=498), two thirds (66%) did not provide a valid referral to a dispensing pharmacy. Most of reproductive aged females (98·4%) live

within a 15-min drive of a mifepristone-dispensing pharmacy. Urban pharmacies were less likely to dispense mifepristone (0.8 95% CI 0.7 – 1.0) or to offer same-day dispensing (0.4 95%CI 0.3 – 0.5). Areas with high residential instability or higher minority/immigrant population concentrations had decreased mifepristone access.

Conclusion: Despite widespread local availability under Canada's regulatory approach to abortion provision as a routine health service, policies to enhance pharmacist referral networks could further improve mifepristone access. These findings may inform policy and service planning for international jurisdictions considering adopting a similar medication abortion framework.

Contraception prescribing among pharmacists in British Columbia: practices, attitudes, barriers and facilitators in the first year following scope expansion

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Background: In June 2023, pharmacists in British Columbia (BC), Canada gained authority to independently prescribe contraception. However, the experiences and perspectives of Canadian pharmacists regarding contraception prescribing are underexplored. The objectives of this study were to 1) understand BC pharmacists' practices, knowledge, and perspectives related to contraception prescribing and 2) identify barriers to contraception prescribing and potential mitigation strategies.

Methods: We conducted a cross-sectional survey of pharmacists practicing in community and primary care settings across BC (June-August 2024). We summarized contraception prescribing practices, perspectives, barriers, and personal and professional characteristics. We calculated risk ratios (RR) with 95% confidence intervals (CI) to estimate the strength of association between pharmacist/pharmacy characteristics and offering contraception prescribing services overall and by type (oral contraceptive pills (OCP), non-pill short-acting reversible contraception (non-pill SARC; patches, rings, injectables), and long-acting reversible contraception (LARC; intrauterine devices (IUDs) and subdermal contraceptive implants).

Results: Of 1395 surveys received, 917 complete survey responses from validated BC community or primary care pharmacists were retained for analysis. Most respondents reported prescribing emergency contraception (92%) and OCP (84%). Two thirds reported prescribing contraceptive patches or rings (67%), and 57% prescribed injectables. In contrast, prescribing LARC, the most effective contraception methods, was less frequent: 42% reported prescribing IUDs and 30% reported prescribing implants. While only 54% of pharmacists reported receiving adequate training, 66% reported they feel confident providing contraception care and 71% reported they believe they can provide culturally sensitive contraception care. Two thirds (64%) of participants reported greater comfort prescribing non-LARC vs LARC methods. Among participants who did not prescribe LARC, the most frequently reported reason was the need for additional training and support (58%). Several characteristics were positively associated with offering contraception prescribing services: less than 10 years practicing in Canada (RR: OCP: 1.24 [1.02, 1.52]; non-pill SARC: 1.29 [1.09, 1.52]; LARC: 1.50 [1.25, 1.79]), working in a low volume pharmacy (≤300 prescriptions/day; RR: OCP: 1.80 [1.38, 2.33]; non-pill SARC: 1.15 [0.89, 1.48]; LARC: 1.14 [0.89, 1.45]), working in a chain, banner or franchise pharmacy vs. independent pharmacy (RR: OCP: 1.74 [CI 1.42, 2.13]; non-pill SARC: 1.41 [1.16, 1.71]; LARC: 1.01 [0.83, 1.22]), availability of a private counseling room (RR: OCP: 1.72 [1.45, 2.05]; non-pill SARC: 1.66 [1.41, 1.96]; LARC: 1.55 [1.28, 1.86]), perception that the pharmacy counseling area is private enough (RR: OCP: 1.46 [1.18, 1.81]; non-pill SARC 1.43 [1.19, 1.73]; LARC: 1.39 [1.14, 1.70]), and working in a pharmacy that actively encourages adoption of new services (RR: OCP: 2.87 [2.42, 3.40]; non-pill SARC: 2.71 [2.25, 3.27]; LARC: 2.19 [1.74, 2.78]). Gender, rurality, and additional education or certifications beyond their entry-to-practice degree were not associated with contraception prescribing.

Conclusions: This study describes BC pharmacists' experiences over the initial year of independent contraception prescribing. The identified pharmacist and pharmacy characteristics associated with contraception prescribing, and training needs, will inform professional development for pharmacists, guide policy discussions on structural barriers and supports, and identify mitigation strategies to address barriers and enhance pharmacists' role in improving contraception access to support improved reproductive public health.

Pill splitting for sustainability: Reducing waste and cost in healthcare

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Introduction: Pill-splitting, the practice of dividing a medication to achieve the desired dose from higher strength tablets, is a strategy which has both financial and environmental benefits. Research supports its cost-effectiveness, indicating that it can reduce medication costs, thereby easing financial burdens as healthcare expenses rise. Reducing single use plastics is part of Canada's Zero Plastic Waste Strategy and supports meeting Canada's target of net-zero greenhouse gas emissions by 2050. Incorporating strategies to reduce single use plastics in healthcare is an important component of pharmacy professionals burgeoning commitment to environmental sustainability. The purpose of this research was to quantify the potential environmental benefits associated with "pill splitting".

Methods: Medications commonly used in the primary care setting that could be split to obtain a lower, but still clinically useful dose (such as 2x10mg atorvastatin doses obtained from splitting one 20mg atorvastatin tablet) were identified, and packaging (stock bottle and lid) were weighed to determine the amount of plastic used at the community pharmacy level. The type of plastic used for the stock bottle was also recorded. To determine potential cost savings of pill splitting, cost per unit (tablet) was collected from the British Columbia, Canada, Pharmacare formulary database in July 2024 in Canadian Dollars (CAD). Cost savings, amount of plastic saved, and quantity of carbon dioxide equivalent (based on the cost to produce the plastic) was calculated per 1000 person years of typical use of the medication.

Results: Ninety-six medications of different dosages were examined. All plastic stock bottles were made of #2 high density polyethylene (#2 HDPE). Pill splitting reduced the amount of plastic in all but two scenarios in our analysis. The amount of plastic saved ranged from -2.51Kg to 66.63Kg per 1000 person years of using the medication. CO_2e savings likewise ranged from -8.16Kg to 216.96Kg per 1000 person years. Cost savings due to pill splitting were present in all but one of the assessed medications, ranging from -$1,113 to $302,877 CAD per 1000 person years of using the medication.

Conclusion: Pill splitting can offer meaningful reductions in single use plastics through reduction in packaging material needed through the medication life cycle. If widely adopted by the large number of people who are taking these common medications, the environmental and financial benefits to pill splitting could play an important role in reducing healthcare expenditures and in meeting global goals towards plastic reduction and net-zero greenhouse gas emissions. Pill splitting should be considered by pharmacy professionals as one way to support environmental sustainability in their practice.

Bridging the gap to innovative therapies for pediatric rare diseases: The role of clinical trials

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Background: According to the European Commission, rare diseases affect approximately 6–8% of the global population, with a significant proportion manifesting in childhood. These diseases are typically chronic or progressive and can lead to severe health complications. While individual rare diseases are uncommon, collectively, they impact a large number of children worldwide. The challenges associated with rare diseases are multifaceted, including diagnostic difficulties, a lack of specific treatments, and limited access to innovative therapies. Many rare diseases still lack effective treatments due to insufficient incentives for the pharmaceutical industry to develop therapies for such small patient populations. Clinical trials serve as the primary means of providing access to innovative therapies for pediatric rare diseases, facilitating the testing of new treatments and offering access to medications that would otherwise be unavailable due to market constraints.

Purpose: This study aims to examine the critical role of clinical trials in ensuring access to innovative therapies for children with rare diseases. It will highlight the obstacles in the development and availability of treatments while emphasizing how clinical trials help overcome these challenges and improve patient outcomes.

Methods: A systematic literature search was conducted using scientific databases such as Google Scholar, PubMed, Web of Science and Scopus. The search was based on the following key terms: ("clinical trials") AND ("rare diseases" OR "orphan drugs") AND ("pediatric treatments") AND ("innovative therapies"). Additionally, relevant clinical trial data and regulatory reports from authoritative sources, such as the European Medicines Agency (EMA) and the U.S. Food and Drug Administration (FDA), were reviewed to provide insights into the role of clinical trials in facilitating access to therapies for pediatric rare diseases.

Results: The analysis highlights the pivotal role of clinical trials in providing access to innovative therapies for children with rare diseases. These trials not only advance the development of novel treatments but also facilitate early access to therapies that would otherwise be unavailable. Data from regulatory bodies, such as the EMA and the FDA, indicate that

several clinical trials have led to the approval of orphan drugs specifically designed for pediatric populations. However, challenges persist, including the limited pool of eligible participants and ethical concerns regarding informed consent in pediatric trials. International collaborations and advancements in precision medicine are emerging as critical strategies in overcoming these challenges and expediting access to life-saving treatments for children with rare and complex diseases.

Conclusion: Clinical trials play an essential role in providing access to innovative therapies for pediatric patients with rare diseases. These trials not only introduce new therapeutic options but also significantly advance scientific understanding of the pathophysiology and management of such conditions. Despite challenges associated with small patient populations, international collaboration and emerging technologies offer hope for children facing rare and complex diseases.

Systematic review of the efficacy and safety of SGLT2 inhibitors in the treatment of type 2 diabetes mellitus

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Introduction: Selective sodium-glucose cotransporter-2 (SGLT2) inhibitors act only at the renal level, allowing the excretion of glucose and acting as osmotic diuretics. By inhibiting the SGLT2 cotransporter, SGLT2 inhibitors avoid glucose reabsorption in the S1 and S2 segments of the proximal tubule. Together with glucosuria, SGLT2 inhibition causes natriuresis, which is associated with negative salt and water balance. This decrease in plasma volume is evidenced by a decrease in blood pressure of 3-6 mmHg for systolic and 1-1.5 mmHg for diastolic blood pressure.

Aim: The aim of this study is to evaluate the efficacy and safety of SGLT2 inhibitors in patients with type 2 diabetes mellitus through a systematic review of scientific publications, examining clinical trials with this class of glucose-lowering medicinal products.

Methodology: The systematic review was performed in accordance with the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline. The study protocol was developed in accordance with the PRISMA 2009 Checklist. Study design: retrospective observational study. Search strategy - performed the review of scientific publications in English, using keywords: diabetes mellitus type 2, SGLT-2 Inhibitors, efficacy, safety, clinical trial, HbA1c. Study period: For the period of 19 years, has been founded 356 scientific publications in MEDLINE databases, Central Library of Medicine and refereed scientific journals. 41 of them met the researchers initial inclusion criteria and considered clinical trials, evaluating the efficacy and safety of SGLT2 inhibitors. A documentary and PICOS (Patient, Intervention, Comparison, Outcomes, Study design) analysis of the clinical trials was conducted.

Results: The results of the PICOS analysis showed that the most significant reduction in HbA1c level was observed after administration of Ertugliflozin 15 mg (-0.90%), Ipragliflozin 50 mg (-0.88%) and Canagliflozin 300 mg (-0.84%). The lowest change in HbA1c level was observed after administration of Dapagliflozin 2.5 mg (-0.60%) and Empagliflozin 10 mg (-0.66%). The reduction in body weight was the most significant after administration of Ertugliflozin 15 mg - with 2.93 kg and after administration of Canagliflozin 300 mg – 2.9 kg. The frequency of documented hypoglycemia during the analyzed clinical trials was low in the treatment groups for all representatives of the SGLT2 inhibitors class, when used as monotherapy. The incidence of polyuria and pollakiuria is the highest after administration of Canagliflozin. Back pain is observed after administration of Dapagliflozin and Empagliflozin. The incidence of nasopharyngitis is the highest after administration of Dapagliflozin and Empagliflozin. Increased levels of ketone bodies have been reported after administration of Canagliflozin. The results of the conducted PICOS analysis also prove the high efficacy of SGLT2 inhibitors in terms of their cardiovascular safety and cardio-renal benefits.

Conclusion: The above reported results support the thesis that SGLT2 inhibitors should become the leading therapeutic choice for patients with type 2 diabetes and comorbidities. In addition to their glucose-lowering properties, they are associated with a very low risk of hypoglycemia in the analyzed clinical trials. In a comparative aspect, SGLT2 inhibitors have more pronounced cardioprotective properties compared to other classes of glucose-lowering medicinal products.

Assessing herbal ingredients in food supplements: Regulatory challenges and health risks

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Introduction: Food supplements (FS) are increasingly used for the prevention and management of various diseases,

particularly those containing herbal ingredients. However, certain plant species contain bioactive compounds that may pose health risks under specific circumstances. Examples include red yeast rice, Rhamnus frangula L., Rhamnus purshiana DC., Cassia senna L, Rheum palmatum L., Rheum officinale Baillon and green tea extracts. These substances are listed in Article 8 of Regulation (EC) No 1925/2006, specifically in Annex III, Part C, and are classified as "Substances under Community scrutiny". Consequently, these substances are subject to comprehensive risk assessment.

Purpose: The aim of the study is to analyze and summarize the scientific information concerning FS containing “Substances under Community scrutiny" and their potential effects on human health.

Method: A critical review of the scientific literature was conducted to collect information about these substances, relevant regulatory frameworks, and their safety profiles. Furthermore, the study identifies the adverse effects of these compounds and discusses some of the reasons for their exclusion from FS, highlighting the importance of regulating plant-based FS.

Results: The substances under scrutiny, as outlined in Regulation (EC) No 1925/2006, include hydroxyanthracene derivatives found in Rhamnus frangula L., Rhamnus purshiana DC, Cassia senna L., Rheum palmatum L., and Rheum officinale Baillon. In red yeast rice, the active compound is monacolin K, while in green tea extracts, it is (-)-epigallocatechin-3-gallate. Our analysis indicates that Camellia sinensis is the plant most frequently associated with adverse effects, followed by red yeast rice. Monacolin K is chemically identical to lovastatin and its content in red yeast rice supplements can vary, making it difficult to anticipate its impact on cholesterol levels and possible side effects. Therefore, in 2022, the European Commission ruled that red yeast rice supplements must have less than 3 mg of monacolins per daily dose.

Conclusion: Reliable and controlled studies are needed to provide clear scientific evidence regarding the potential adverse effects of "Substances under Community scrutiny" and the rationale for their restriction in FS.

The Japanese version of the perceived service quality scale for community pharmacies: Scale development and validation

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Background: Delivering person-centered care is a core responsibility of pharmacies. However, no validated Japanese scale currently evaluates community pharmacy services based on patient experience.

Objective: To translate, culturally adapt, and validate the Perceived Service Quality Scale (pSQS) and its short-form (pSQS-SF6), originally developed to assess patient experiences in community pharmacies, into Japanese (pSQS-J and pSQS-J-SF6).

Methods: Using the established translation and cultural adaptation process for patient-reported outcome measures, the pSQS-J was developed from the original English version. The pSQS-J-SF6 was created by selecting six items from each subscale. A survey was conducted with pharmacy users in Wakayama City, and descriptive statistics were reported. Confirmatory factor analyses (CFA) were performed to explore psychometric properties.

Results: The pSQS-J was systematically developed through a rigorous process. An online survey incorporating the 19 pSQS-J items plus demographic and other characteristics was completed by 231 participants across nine pharmacies. Following minor modifications (deleting one item and re-specifying another to a different factor), a 6-factor correlated CFA model demonstrated an acceptable fit and provided evidence of convergent and discriminant validity. A 6-factor bifactor model demonstrated improved fit for the data and inspection of the reliability indices reinforced the multidimensionality of pSQS-J. However, CFA results for pSQS-J-SF6 indicated insufficient evidence of convergent validity.

Conclusion: The pSQS-J is a valid and reliable tool for evaluating patient experience and driving service improvements at Japanese community pharmacies, contributing to improved person-centered care.

Challenges in medicinal packaging for older people: Insights from a rehabilitation setting

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Background Information: Medication adherence in older people is often hindered by challenges associated with medicinal packaging. Physical limitations such as reduced dexterity, arthritis, and muscle weakness can make opening medicine packaging difficult, leading to a dependence on caregivers and potential non-adherence. Various types of medicinal packaging, such as medicine bottles, are child resistant. Such mechanisms are essential for safety but may pose additional barriers for older people. Exploring the preferences and difficulties experienced by older people with such packaging is therefore necessary for the design of more accessible and usable pharmaceutical packaging for these individuals.

Purpose: The primary objective of this study was to evaluate the difficulties experienced by older people when using pharmaceutical medicine bottles, identify any preferred design features, and assess the impact of packaging on accessibility and adherence.

Method: This study was observational, and part of an overarching project aimed at designing a novel medicine packaging solution for older people. Five older people with reduced dexterity and undergoing hospital rehabilitation were recruited to participate in a structured validated questionnaire. Considering the inclusion criteria needed for recruitment, the number of participants was small, but trends could still be obtained from the data gathered. The questionnaire was aimed at assessing physical limitations that affect dexterity and strength, frequency of medicine bottle use, ease of opening different bottle shapes and mechanisms, and preferences for novel packaging features. The data returned related to participants' preferences for traditional versus non-traditional packaging designs and functional features such as cap mechanisms was analysed using the Kano method (an analytical design tool used to classify and prioritise customer requirements and desires, based on how they affect customer satisfaction).

Results: Three of the participants required assistance when opening medicine bottles. All participants noted that traditional cylindrical bottles were the easiest to handle whilst twist-off and flip-open mechanisms (non-child resistant features) were rated as being the easiest to use. The push-and-twist child resistant mechanism was reported as being the most challenging to use by all the participants. Three of the participants were open to incorporating novel features in the bottle's design, such as integrating a numeric dial within the bottle's cap.

Conclusion: This study highlights the need for more accessible medicine bottle designs for older people which balance ease of use with safety considerations. Whilst cylindrical bottles with simple twist-off caps were preferred, receptivity to innovative features suggests opportunities for design improvements that enhance usability without compromising safety. Future research should explore larger and more diverse populations of older people to evaluate improved packaging solutions further, examine user experiences in detail, and assess their real-world impact on medication adherence. Integrating design principles such as human-centred design and user experience when designing pharmaceutical packaging could significantly improve accessibility and independence among older people.

Digitalised monitoring of prescription patterns for reimbursed medicine

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Introduction: Danish health data are unique. They include the entire population over many years and cover several health areas. The uniqueness comes from the fact that they are gathered in national registers, making the data high quality due to standardisation and digitalisation.

Every Danish citizen has a public health insurance and a unique personal identifier 'CPR', which enables linking data across registers, while legislation ensures the balance between personal data protection and the usage of data. Therefore 99 % of all citizens are registered with a specific general practitioner (GP), who is part of the public health care system.

Part of the expenses linked to patient prescriptions, issued from the GPs, hospitals and others, are reimbursed by the Danish Primary Health Care (DPHC). The public health insurance ensures that the out-of-pocket payment for the patients are reduced by reimbursement of the pharmacies.

The objective of DMOT is to analyse to which extend the quality of the data distributed through the LUNA BI system and the design of LUNA BI in Tableau supports the purpose of seamlessly distribute data to the public, politicians, board of directors in health care functions, health professionals, employees in DPHC or scientists. Given the high level of digitalisation, we assume there are few data of low quality. For the evaluation, DMOT uses the DAMA approach for valuation of databases.

Methods: The presented study is based on a design where the total number of patients and the reimbursement, expressed

in Euros, are calculated given that the prescription issuers are coded "Unknown". The dimensions and numbers in the analysis are evaluated based on the six DAMA dimensions: Accuracy, Completeness, Uniqueness, Consistency, Timeliness and Validity.

Data has been extracted from The Accounting System of the Danish Regions, LUNA, and consist of all bills from the pharmacies. The datawarehouse (DW) on top of the accounting system have on a regional and national level.

Data is limited to the period 1st of January 2015 to the 31th of December 2024 for regional data. On a national level, data is limited to the period 1st of January 2022 to the 31th of December 2024.

Results: On a regional level, it is not possible to identify Primary Health issuers or Hospital issuers of the prescriptions for 78.000 patients and subsidies for € 2.6 mill regardless the drugs for a period of 10 years.

On a national level, it is not possible to identify Primary Health issuers or Hospital issuers of the prescriptions for 699.000 patients and subsidies for € 91.9 mill regardless the drugs for 3 years.

Conclusion: The study shows serious lack of Accuracy, Completeness, Consistency and Validity in the DW due to high number of unknown prescription issuers. The consequence is that the regions in general and espeically DPHC cannot fulfil their regulatory tasks due to the laws. Another consequence is that scientific research regarding prescriptions is challenged when it comes to have comprehensive data for patient courses.

Caring for people who use drugs: A Global review of the evolving role of pharmacy professionals in harm reduction services

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Background: Despite considerable efforts in drug overdose prevention, the number of individuals affected by drug-related harms continues to rise at unprecedented rates globally. The World Health Organization has reported that drug use was linked to approximately 600,000 deaths worldwide in 2019, with nearly 80% attributed to opioids. Pharmacy professionals (pharmacists and pharmacy technicians) play a vital role in public health, and their involvement in responding to the drug overdose crisis can be seen as an expansion of their public health responsibilities. Their participation in overdose prevention strategies, including naloxone programs and prescribed opioid medication management, has been documented. However, their role in harm reduction services for people who use drugs (PWUD) has yet to be fully explored. This gap has created challenges in implementing harm reduction services related to pharmacy settings.

Purpose: Summarize harm reduction services for PWUD provided by pharmacy professionals.

Methods: Six databases (MEDLINE, Embase, CINAHL, Web of Science, SCOPUS, and Google Scholar) were searched using terms related to pharmacy professionals, PWUD, and harm reduction. This review includes peer-reviewed literature describing or evaluating the implementation of harm reduction services for PWUD by pharmacy professionals. Articles considering pharmacy professionals' direct interaction with PWUD, from all countries, written in English, Spanish, or French, were included. Two team members screened studies for eligibility and extracted the data. A descriptive analysis was performed to address the research questions, offering a numerical overview of the quantity and types of research study designs and a narrative synthesis. Knowledge partner engagement (community and health system partners) guided this study.

Results: Of the 66 articles included in the analysis, the majority were from the United States (70%) and the United Kingdom (20%), published from 2020 onwards (55%). Services described included opioid agonist therapy programs (47%) (e.g., methadone, buprenorphine); hepatitis C screening and treatment (15%); needle and syringe exchange programs (12%); distribution of naloxone kits and overdose education (8%); HIV education and dispensing pre-exposure prophylaxis (5%) and drug-checking services (2%). Pharmacy professionals' roles were usually described as collaborative and integrated into interdisciplinary teams or networks (85%). However, pharmacists' roles were more frequently reported than pharmacy technicians (100% vs 3%, respectively). Few articles (39%) incorporated harm reduction as a concept, of which most (21/26) referred to it as a category of services rather than a set of principles or philosophy of care. Almost two-thirds of the studies (62%) mentioned regulations, policies, or other legal frameworks supporting pharmacy professionals' roles and involvement in the interventions. Some authors identified training as a challenge or a strategy to consider in future implementations (9%); some training topics mentioned included trauma-informed care, stigma, clinical practice, and harm reduction.

Conclusion: These findings highlight the opportunity for pharmacy professionals to increase access to care for PWUD and the relevance of partnerships to achieve successful interventions. They demonstrate the role of pharmacy professionals in delivering harm reduction services for PWUD, emphasize the advantages and challenges of collaborative care models in pharmacy practice within this field, and

provide recommendations for further pharmacy research, policy and practice innovation.

How can community pharmacy teams prevent prescription and over-the-counter opioid misuse? A qualitative study using the Capability, Opportunity, and Motivation Behaviour (COM-B) model

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Introduction: Opioid misuse rates in the UK are high. Community pharmacists (CPs) are responsible for dispensing prescription and over-the-counter (OTC) opioids and are capable of reducing opioid misuse rates. Commissioners can support CPs to carry out opioid misuse prevention services. Commissioners' views regarding CPs could influence the level of support they would offer. This study is aimed at determining commissioners' views regarding CPs role in the prevention of prescription and OTC opioid misuse.

Method: A qualitative study of eight pharmacy commissioners were carried out. Interviews were conducted via Zoom and interview transcripts were downloaded. Thematic analysis was carried out with the aid of NVivo 11 Pro.

Results: Commissioners comprised of five pharmacists and three General Practitioners (GPs). Commissioners who were pharmacists appeared not to have any one-to-one relationship with community pharmacists. All commissioners' efforts were focused at reducing prescription opioid misuse in GP practices. CPs can contribute to preventing opioid misuse but were limited by several challenges including OTC opioid regulation and poor CP-GP interaction. Suggested ways of improving CPs' roles include change in classification of OTC opioids, shared opioid supply records and support of the healthcare system. Factors that limited commissioners from supporting CPs were the commissioners' duties and lack of research.

Conclusion: CPs require the support of commissioners, health professionals and researchers to overcome the identified challenges. Modification of the structure and duties of commissioning groups to support closer interaction with community pharmacy practice could be beneficial in promoting CPs roles in opioid misuse prevention.

Development of pharmacists ethical code

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Introduction: harmaceutical care. This applies to individual pharmaceutical patient care, where pharmacists have direct patient contact. But also for indirect pharmaceutical patient care, where pharmacists contribute to the promotion of pharmaceutical care, for example in education or policy. This requires clear norms and values, to which every pharmacist can and wants to adhere. The current times are uncertain (geopolitical), in which the resilience of pharmacists is more important than ever. A common code of ethics of all pharmacists is fundamental here.

The purpose was to develop a code of ethics of all pharmacists. This is unique, until now ethical codes had only been developed for certain groups of pharmacists (for example community pharmacists, industry pharmacists).

Method: Developing a code of ethics of all pharmacists requires a careful process. To this end, research was first conducted on current foreign pharmacists codes of ethics. In addition, the working group studied historical codes of pharmacists along with current pharmacy practice, legislation, guidelines and current developments. Exploration was also carried out in the form of interviews with groups of community pharmacists, hospital pharmacists, industry pharmacists and pharmacists working in education or policy. Based on these interviews, a number of draft rules were created. These rules were discussed with different groups of pharmacists in workshops. After which the rules were developed into a supported code of all pharmacists.

Results: The result of the exploration and the workshop is about 15 core rules applicable to all pharmacists and in line with current practice and topical issues. We distinguished the rules that apply exclusively to pharmacists providing individual patient care.

Conclusion: We conclude that the joint development of a code of ethics of pharmacists contributes to connection among all groups of pharmacists, shows what pharmacists stand for and what society can expect from pharmacists. The joint code of ethics also contributes to pharmacists' resilience, which means acting together when a process is disrupted. For example, in case of medicine shortages, infectious disease outbreak or disaster.

Enhancing the capacity of community pharmacists for PrEP initiation in Baltimore and San Diego: an implementation mapping study

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Introduction: According to the CDC, in 2022 36% of eligible people were prescribed PrEP and nationally for each new HIV diagnosis there are 14 PrEP users. Pharmacy-initiated PrEP could potentially expand access, but pharmacy implementation requirements for PrEP delivery remain understudied. By offering PrEP directly, pharmacists can reduce wait times, increase accessibility in underserved areas, and mitigate stigma associated with traditional healthcare settings. Current legislation allows pharmacy-initiated PrEP in 11 US states (e.g., California) but not others (e.g., Maryland).

The study aimed to identify a prioritized list of implementation strategies to build the capacity of community pharmacists to initiate clients on PrEP.

Method: Two sets of sequential focus group discussions (FGDs) were conducted with community pharmacists and allied PrEP providers in Baltimore, Maryland and San Diego, California.

The first FGD in each set focused on identifying and achieving consensus on priority barriers to and facilitators of pharmacy-initiated PrEP implementation in each setting. Barriers and facilitators were informed by prior work by this team, including a phone survey of community pharmacies and key informant interviews. A publicly available tool was used to map from priority constructs in the Consolidated Framework for Implementation Research to potential implementation strategies in the Expert Recommendations for Implementing Change (ERIC) taxonomy. A second round of FGDs was then conducted to achieve consensus on priority strategies for further study.

Results: Six FGDs were held, three in Baltimore, Maryland and three in San Diego, California with a total of nine participants.

The key priorities for enabling community pharmacy-initiated PrEP were identified as:

1.Understanding how to modify workflow to support the introduction of a new service.

2.Raising awareness among other service providers in other clinic types to ensure continuity of care.

3.Establishing mechanisms to enable service funding.

Evidence-based implementation strategies for workflow and service awareness shared common themes, particularly the need for an adaptable implementation blueprint and educational materials. However, strategies addressing service funding showed little overlap with these priorities and required separate exploration. Policies supporting provider status and funding exist in some states and need to be enabled in others. Where they do exist they have yet to be implemented. Across all areas, identifying and preparing champions and local opinion leaders was recognized as crucial.

Conclusion: Potential key implementation strategies have been identified that can support the enhancement of community pharmacist capacity to implement their own PrEP programs. These findings can inform future policy discussions, guide implementation efforts, and help scale pharmacy-led PrEP services nationwide.

Enhancing pharmacist performance: Development of a capability framework to support Australia's evolving healthcare needs

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Introduction: The Australian Pharmacy Council (APC) is the national standard-setting and accreditation authority for pharmacy education and training. Accreditation is a valuable tool to ensure educational quality and shape the health workforce of the future. In Australia, the pharmacy profession is regulated by the Pharmacy Board of Australia (PharmBA).

Making the system work is supported by APC's work in policy development, practice frameworks and collaboration, creating opportunities to advance capabilities of the pharmacy profession. Capability Frameworks and Accreditation standards must evolve to produce pharmacists who are able to work effectively with, and provide support for, Australia's diverse population.

The intent of the Pharmacist Capability Framework (the Framework), owned by PharmBA, is to foster good practice and enhance efficiency and consistency across health professions, regulated by Australian Health Practitioner Regulation Agency (Ahpra) under the National Registration and Accreditation Scheme.

Methods: APC is developing, on behalf of PharmBA, the Framework to describe the baseline level of capabilities of a registered pharmacist who is adaptable to future practice change. The Framework will be used for both the accreditation of pharmacy programs, as well as the registration of a pharmacist. This strong alignment of the accreditation and registration functions will support the

pharmacist workforce to remain contemporary, fit for purpose, and to meet Australian healthcare needs.

As part of the development of the Framework, APC has undertaken a comprehensive and systematic literature review, by thematically analysing diverse models and practical applications to identify consensus capabilities across pharmacy settings and extracting recurring structures to provide a robust foundation that aligns with emerging roles and contemporary professional standards.

The development of the Framework will also include a wide-range consultation with stakeholders, the public and the profession.

Results: It is expected that in early September the Framework will have undergone a number of rounds of consultation including consensus panels with subject matter experts and high level stakeholders, and public consultation.

Conclusion: The development of this evidence-based, contemporary framework provides consistency across the pharmacy profession and establishes a foundation for best practice that will elevate professional standards in the delivery of care. The Framework will define the capabilities of a newly registered pharmacist who is adaptable to evolving practice settings.

This work dovetails with FIP Developmental Goal 13 by developing and implement needs- and evidence-based practice-related policies aligning with broader national health policies and priorities.

Pharmacist-led review of drug utilization of antipsychotic medications in a tertiary government hospital

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Background: Mental health remains a major public health concern in the Philippines, with schizophrenia posing major burdens on individuals, families, and society. Schizophrenia is a disabling and chronic psychiatric disorder characterized by hallucinations, delusions, and impairment of cognitive and social functioning. Antipsychotic drugs remain the most effective treatment. However, the prevalence of irrational drug use in psychiatric patients, including antipsychotic polypharmacy and non-adherence, has been associated with negative outcomes such as increased adverse effects, rehospitalization, higher cost, and impaired quality of life. It is worth noting that only 6% of the Philippines' total health expenditure is appropriated towards health, resulting in high out-of-pocket expenditures among Filipinos. Hence, access to affordable mental healthcare remains a significant challenge. To address this, drug utilization studies are crucial for developing strategies to optimize healthcare resource use, address drug use issues, promote rational prescribing, and improve patient access, particularly in resource-limited settings.

Objectives: The study evaluated the utilization of antipsychotic medications among inpatients with schizophrenia in a tertiary government hospital in Cebu City.

Methods: The study utilized a cross-sectional and observational study design. A retrospective review of medical records was carried out from January 1, 2022, to December 31, 2022. Descriptive statistics in Microsoft Excel® were used to report findings, and a Poisson regression model in IBM SPSS Software version 25 was used to analyze the data.

Results: A total of 109 patient medical records were screened, with 33 records were selected based on the inclusion criteria. Risperidone (35.38%) was the most prescribed antipsychotic drug. A higher inclination towards the use of second-generation antipsychotics was observed than first-generation antipsychotics. Paliperidone palmitate injection had the highest consumption (4.8056 defined daily doses/100 bed days) among the antipsychotics. It was found that underinvestment in newer medications limits patient access. Significant relationships were found between the number of drugs per medication order and male gender ($p=0.00229$) and substance abuse disorder ($p=0.0679$). The average number of antipsychotic drugs prescribed per medication record was 1.97, while the average number of drugs per patient was 3.82. All the medications were prescribed by their generic names and sourced from the Philippine National Drug Formulary. Injectable drugs accounted for 19.05% of the total medications. Drug therapy problems, such as drug–drug interactions (82%) and therapeutic duplication (58%), were prevalent. Substance use disorders (9.09%) were found as comorbidities among patients studied.

Conclusion: A prescribing trend towards second-generation antipsychotics, with risperidone being the most frequently prescribed antipsychotic medication, was found in this study. Utilization patterns of antipsychotics generally conform to the WHO standard recommendations. This study highlights the high consumption of paliperidone palmitate injection, which calls for further research on antipsychotic consumption in patients with comorbid substance use disorder. Strengthening pharmacist involvement in patient care alongside policy-driven approaches can improve access, optimize therapy, and ensure quality antipsychotic medication use.

Challenges and enablers impacting the implementation of South Africa's Central Chronic Medicines Dispensing and Distribution Program: A scoping review

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Background: Ensuring accessible safe, affordable and quality-assured medicines remains a cornerstone to achieve universal health coverage and realising the United Nations 2030 Agenda for Sustainable Development. In South Africa, the Central Chronic Medicines Dispensing and Distribution (CCMDD) programme was established to improve access to chronic medications for stable patients. However, the effectiveness of its implementation varies. Therefore, it is important to take stock of the measures implemented to achieve access to chronic medicines, track their evolution and subsequently improve their offerings in South Africa. This study explores the barriers and facilitators influencing the implementation of CCMDD in South Africa.

Purpose: The main objective of this review was to identify and evaluate key challenges and enablers impacting the implementation of the CCMDD programme in South Africa.

Method: The Search was conducted using specific key phrases employing Boolean operators (“OR” and “AND”) in seven library databases namely Cochrane library, EBSCOhost, MEDLINE, PubMed, Science Direct, Scopus, and Springer Link, filtering primarily for duplicates, then title and abstract screening and finally a full-text screening was employed. A grey literature search was also conducted through Google Scholar and Sabinet. The investigation included all English language literature published in South Africa between 2014 and 2024.

Results: The review process yielded a total of 41 eligible articles. This scoping review identified various barriers and facilitators to implementation of the CCMDD programme. There was a variability as some elements were reported as a barrier in one context and a facilitator in another. Supposed reduction in patient waiting times, enhanced treatment adherence, long term cost benefits and improved access to medicines were cited as facilitators. Inadequate programme awareness, restricted availability to pick-up points in remote areas, miscommunication regarding collection dates and suboptimal service delivery by staff cited as some barriers. Stigma was reported as both a facilitator and a barrier to programme implementation, depending on the context.

Conclusion: The scoping review highlights the gap between planned activities/policy design and practical implementation of the CCMDD programme. The study has significant implications for policy and practice. Strengthening implementation strategies through targeted policy interventions is crucial for optimizing programme outcomes. The findings provide valuable insights for policymakers and healthcare stakeholders to enhance equitable access to chronic medicines.

Singapore’s pharmacy leadership development strategy

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Background: Pharmacy in Singapore encompasses diverse roles crucial for safe medication use and patient well-being. During a retreat organised by the Chief Pharmacist's Office (Ministry of Health, Singapore) in March 2022, it was highlighted that leadership development appears to have been less prioritised over clinical competency. In 2023, a comprehensive landscape survey was undertaken to map existing leadership frameworks and pharmacy-specific leadership support structures, as well as to identify areas for potential improvement. Subsequently, in October 2024, a baseline leadership development perception survey was conducted to assess the current perception of leadership development among Singapore's pharmacy workforce.

The Pharmacy Leadership Development Strategy (PLDS) was developed to cultivate healthcare leaders within and beyond pharmacy, capable of providing holistic perspectives in key decision-making and leading health ecosystems.

Methods: PLDS adapts leadership skillsets and levels from the Ministry of Health Holdings ONE Healthcare Leadership Framework, incorporating domains and performance criteria from the Ministry of Health’s Development Framework for Pharmacists (DFP). Recommendations were also based on inputs from healthcare professionals, organisational and human resource leaders with integrated findings from the landscape survey as an addendum within the strategy.

Results: The PLDS outlines as a Leadership Development Journey, beginning with cultivating Self-Leadership as the cornerstone of leadership development, before transitioning into Leading Others to build a supportive and high-performing team environment. It employs a “Why-How-What” Approach. “Why” involves discovering individual purpose, creating a personal mission statement for leadership development. “How” describes a systematic targeted approach focusing on leadership skillsets and competencies for specific goals at each leadership level. Lastly, “What” highlights opportunities to develop and

practice leadership skills, advancing the pharmacy profession. The PLDS was successfully launched in October 2024.

Conclusion: The PLDS aims to build a pool of self-motivated leaders across the pharmacy workforce, equipped with strong professional identity and necessary skills to navigate the evolving healthcare landscape, drive innovation, and advocate for pharmacy practice and healthcare advancement in Singapore.

Building upon peer support with industry-specific stress management resources to support a sustainable Australian pharmacy workforce

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Internationally, health workers reported increased stress following the COVID-19 pandemic. Pharmacy workers in Australia were no different, increasing use of a confidential pharmacist peer support phone service operated by the Pharmacists' Support Service (PSS) as reported at FIP 2023. PSS has 30 years of experience and is well accepted by members of the Australian pharmacy profession. Believing a pharmacy workforce which is better equipped to manage stress will be more sustainable and recognising the limited impact of individual peer support, PSS previously published a practical resource to support members of the Australian pharmacy workforce based on the reasons pharmacists contact the PSS. An updated edition has been published. The publication will provide Australian pharmacy workers with evidence-based information and references in one resource for creating sustainable workplaces which anticipate and manage stressful pharmacy situations in a holistic, well-being centred approach.

A pharmacist academic was recruited as editor, and an editorial committee established with representatives from all major Australian pharmacy organisations. An informal literature review of international and Australian pharmacy workplace resources was conducted. Collated information was prioritised if linked to federal and state workplace wellbeing initiatives, informed by research, evidence, or passed validation within the editorial committee. This data was used to update the previous publication's pragmatic approach by acknowledging individual and organisational impacts on wellbeing by workplace, professional and system structures. Where little data was available for specific areas of stress, contributions from specific individuals with expertise or lived experience were sought within the Australian pharmacist community, e.g. neurodivergence, sexual orientation and gender identity. The publication was reviewed by the editorial committee and PSS team members including experienced pharmacists with specific policy and profession-wide expertise.

This revised publication builds upon previous pragmatic advice and draws upon a national framework for an evidence-based workplace health and safety approach consistent with Safe Work Australia. It provides guidance on: (1) the professional, business and organisational contexts of the pharmacy profession in Australia; (2) equipping pharmacy workplaces to minimise stress by promoting wellbeing, including planning for change and disasters; and (3) current support structures for pharmacy workers and organisations, including self-care guidance. The publication will be released in July 2025 and made freely available online for all Australian pharmacy workers.

The presentation will outline rationale for content, the process used to develop and evaluate content and examples of content. Discussion will consider how to maximise use of the publication by members of the pharmacy profession to ensure it has an impact on workforce sustainability. In conclusion this pharmacy workplace stress management resource has been updated with current evidence and advice, in line with Australian healthy workplace initiatives. This in-depth revision required time investment from all major Australian pharmacy organisations. Accredited education modules based on the publication will be developed to encourage utilisation, including opportunities for feedback from learners. This resource could also be incorporated into student and pharmacy intern learning activities. We encourage pharmacy communities in other countries to develop such resources specific to their practice of pharmacy to enhance workforce sustainability.

Exploring Australia early career pharmacists' sources of stress and their coping strategies

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Introduction: Research conducted during the height of COVID-19 has highlighted the need to prioritise the wellbeing

of healthcare workers, including pharmacists. Increased workforce demands associated with an ageing population also contributed to the exacerbation of stress among Australian pharmacists. High levels of workplace stress have been shown to be inversely correlated with job satisfaction and may even manifest as burnout if prolonged without management. Prior research has shown that pharmacists under the age of thirty, as well as Early Career Pharmacists (ECPs) with up to ten years of general registration, are at a significantly higher risk of developing burnout compared to their older and more experienced peers. Burnout among pharmacists also has a positive correlation with increased absenteeism and intention to leave the profession. Understanding the unique stressors that ECPs face is important for the future design of effective interventions. This study aims to identify the key stressors contributing to pharmacists' feelings of stress, and the current strategies being implemented to mitigate these challenges.

Purpose: The objectives of this research are to (i) explore the experiences of ECPs dealing with stress, (ii) determine the sources of stress experienced by ECPs, and (iii) to explore how ECPs manage workplace stress, and their coping strategies of choice.

Method: Twenty-four ECPs participated in this study. They were recruited via a social media flyer distributed to a Facebook group for ECP members of the Pharmaceutical Society of Australia. Following expression of interest, these pharmacists corresponded with the research team to organise a suitable time for an interview. Semi-structured interviews were conducted and audio recorded via Zoom between January and February 2025. These interviews varied in length from nineteen to forty-seven minutes. The overall structure of the interview was based in Critical Incident Technique, a qualitative research method used to identify and analyse impactful incidents that shape a person's experiences. After answering some demographic questions, interview participants were asked to describe incidents in the workplace that made them feel particularly stressed or pressured.

Results: The stressful experiences recalled by the ECPs stem from four categorical sources: (i) unrealistic and unethical demands from patients, (ii) violent aggression and abuse, (iii) feeling unappreciated and undervalued and (iv) suboptimal workplace operations and culture. Many of the ECPs expressed that they enjoyed being pharmacists, despite having some frustrations. Cultivating relationships and providing help to patients was an aspect of pharmacy that brought many participants joy. Both exercise and sharing with others were noted as key coping strategies in response to stress.

Conclusions: Australia is currently experiencing a shortage of healthcare professionals, including pharmacists. The wellbeing and retention of pharmacists is paramount to an effective healthcare workforce and optimal patient outcomes. The results are predicted to inform strategies for pharmacist wellbeing and career retention, ultimately enhancing workforce sustainability and patient care.

Understanding First Peoples lived experience of pharmaceutical care during healthcare transitions: A grounded theory study

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Introduction: During transitions of care, First Peoples are at higher risk of medication misadventure due to inequitable quality use of medicines, potentially resulting in harm and hospital readmissions. Evidence states poor control of chronic disease states and subsequent higher hospital admissions, morbidity and mortality for First Peoples might be directly attributable to poor medicine management. Addressing the deeper truth of social and emotional wellbeing is thought to be key to improving quality use of medicines for First Peoples; consideration of medication misadventure in a wider context of social and historical circumstance, pharmacists recognising and responding to First Peoples unique experiences. Bainbridge et al articulate grounded theory as a methodology which enables awareness and comprehension into processes for raising the prosperity, health, and well-being of the First Peoples of Australia. This grounded theory study partnered with First Peoples to enhance First Peoples pharmaceutical care and advance equitable quality use of medicines through understanding of lived experience. Grounded theory (GT) is becoming an increasingly recognized pharmacy practice research method however it is not well understood; the presentation of this unique study provides an opportunity to describe a constructivist methodology and increase the pharmacy professions appreciation and knowledge of this method and its application.

Method: Ethics granted by Far North Queensland Human and Ethics Review Committee; HREC/2024/QCH/105619-1799. The study is guided by a culturally safe and respectful research framework and all First Peoples study interpretations have been centred through ongoing advice from the research team's cultural advisor. Participants are patients of a unique pharmacist-led medication management service, aimed at providing medicines support for First Peoples transitioning between hospital and community. This study uses a variety of sampling methods: purposive, snowballing, and theoretical. Snowball sampling is not normally used in grounded theory, however the use of interpersonal relations and connections between First Peoples, is being used as the researchers positioning requires the building of trust. Data is being generated through semi-structured interviews, ethnographic observations, fieldnotes and/or memos. Sample size is thirty semi-structured interviews and 20 hours of observational data. Data analysis is guided by an evidenced grounded theory framework.

Results: Data collection for the study is well underway along with concurrent data analysis; analyzing data and

undertaking comparative analysis from the beginning, the first semi-structured interview, is an essential element of GT and distinguishes it from other qualitative methods. Analysis of semi-structured interviews and observations will be presented along with developed concepts and categories and a preliminary substantive theory.

Conclusion: This GT study is the first of its kind in Australia to facilitate First Peoples voices from a pharmaceutical care perspective in a hospital setting and across the transitions of care; the study increases understanding of the interactions of work systems and processes relevant to pharmaceutical care, during healthcare transitions. Through understanding and enabling integration of lived experience into health service delivery, improvements in health outcomes can be achieved. The methodology used in this study provides a distinct framework for pharmacy practitioners undertaking research in partnership with vulnerable and diverse populations.

Best practices in citizen engagement for pharmaceutical policy: Insights from the WHO European Region and Scandinavian case studies

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Background information: Citizen engagement (CE) enhances transparency, trust, and real-world relevance in pharmaceutical regulation, shaping policies from authorisation to distribution. The World Health Assembly has emphasised improving transparency in health markets and endorsed strengthening social participation in health decision-making. Despite growing recognition, questions remain on CE's effectiveness, impact measurement, and best practices. Identifying successful CE practices across the World Health Organization (WHO) European Region can guide improvements in decision-making and engagement across countries.

Purpose: This study aims to identify best practices in citizen engagement across the WHO European Region, focusing on Scandinavian countries as case studies.

Method: A desk review was conducted to identify best practices in CE in pharmaceutical policy decision-making. The study followed a systematic process, searching two databases, PubMed and Scopus, as well as grey literature, including policy documents. The search was limited to articles in English, Danish, Swedish, and Norwegian languages, with a time frame restriction of the past ten years. 1832 review articles, guidelines, empirical studies, reports and legal framework, from the data bases, alongside the grey literature, were screened based on specific inclusion criteria, and thematic analysis was performed to identify key themes and patterns in the data. To support the desk review, semi-structured interviews will be conducted with policymakers and representatives from patient organizations in Denmark and the European Medicines Agency. The interviews will be transcribed and coded using NVivo 15 and analysed through thematic analysis.

Results: This study is part of a larger global WHO study examining best practice in CE in pharmaceutical policy across all WHO regions. The desk review and stakeholder interviews revealed varying levels of citizen engagement across the region. Scandinavian countries demonstrated robust frameworks for citizen involvement, particularly in collaborative and co-productive engagements. Key practices include transparent communication channels, structured feedback mechanisms, and inclusive decision-making processes. Additionally, the thematic analysis highlighted several recurring themes: the importance of trust-building between stakeholders, the need for continuous engagement rather than one-off consultations, and the value of integrating citizen feedback into policy revisions. However, several hindrances to meaningful citizen engagement were identified, including a lack of formal processes and platforms for engagement, limited resources, and existing power imbalances. These barriers often result in tokenistic participation rather than genuine involvement.

Conclusion: The study emphasizes the need for participatory governance frameworks to enhance citizen involvement and ultimately improve health outcomes. These findings can guide policymakers in other countries to adopt best practices in citizen engagement.

Medicine shortages in Sri Lanka: Supply chain stakeholders' understanding and perspectives on prevalence

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Introduction: Identifying the prevalence of medicine shortages is a crucial first step in addressing its complexity. The shared experiences of supply chain stakeholders from manufacturing to the healthcare delivery have provided valuable insight into the prevalence of medicine shortages in many countries. However, such systematic approaches to assessing medicine shortages remain underreported in developing countries, such as Sri Lanka. Therefore, this study aimed to identify medicine supply chain stakeholders' understanding of medicine shortages and their perception of its prevalence in the Sri Lankan public healthcare sector.

Method: Using a qualitative approach, various categories of medicine supply chain stakeholders employed within the public sector were purposively selected and interviewed using a structured interview guide. Stakeholder recruitment was via snowball sampling technique and interviews were conducted until data saturation was reached. Interviews were transcribed and translated into English and then analysed for thematic concepts using LeximancerTM.

Results: A total of 69 medicine supply chain stakeholders participated in this study, Participants described medicine shortages as the unavailability of medicine, and additionally described unique and differing terminology regarding their descriptions of medicine shortages, based on their specific role within the medicine supply chain. Regarding the prevalence of medicine shortages, most categories of stakeholders reported the daily occurrence of medicine shortages in public hospitals, typically lasting about a week under general circumstances. They highlighted the exacerbation of medicine shortages during the post-COVID-19 pandemic period and associated economic crisis, reporting an increase in both the number and duration of medicines in short supply. When comparing the degree of medicine shortages across the pre- and post-COVID-19 periods, most stakeholders reported an approximated value of 30% - 60% increase in shortage post-COVID-19 in the public sector, compared to 10% - 15% medicine shortages pre-COVID-19. Medicine shortages were reported across nearly all therapeutic categories, with cardiovascular, anticancer, and antibiotic medicines being the most affected. In addition to these common therapeutic categories, the shortages of medicines acting on the nervous and respiratory systems were highlighted during the post-COVID-19 period. Intravenous dosage forms were highlighted as being in short supply in both pre-and post-COVID-19 periods. The oral dosage forms such as tablets, capsules, and paediatric syrups were added to the shortage list during the post-COVID-19 period.

Conclusion: This study highlighted a multitude of different terms and definitions of medicine shortages used by different key medicines supply chain stakeholders within the Sri Lankan public sector. A standardised definition of medicine shortages is required at a national level to enable effective communication and understanding by all medicine supply stakeholders towards effective monitoring, reporting, and impact assessment of medicine shortages in Sri Lanka. Establishing national-level protocols and strategies for continuous surveillance is recommended to mitigate medicine shortages in the Sri Lankan public sector. Future research using a quantitative approach will provide further insight on the extent of medicine shortages, thereby facilitating strategic interventions for best practice medicine shortage management.

Medicine shortages in Sri Lanka: Causes, actions, and beyond

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Introduction: Medicine shortages are a wicked problem, involving complex systems and many stakeholders. Numerous points in the supply chain and medicine use process can cause medicine shortages. Identifying causative factors is crucial for effective management; but limited literature is available from developing countries such as Sri Lanka. The research on country-specific causative factors and mitigation strategies for medicine shortages remains limited in Sri Lanka, where lingering impacts from the COVID-19 pandemic and the economic crisis continue to affect the healthcare system. Therefore, this study aimed to identify potential factors that contribute to medicine shortages in the Sri Lankan State sector, actions taken by stakeholders to reduce or manage the impact of these factors, and to propose strategies to improve management of medicine shortages.

Method: A mixed-method approach was used, consisting of semi-structured interviews with supply chain stakeholders to explore their perceptions of causative factors and actions taken to address them; followed by a quantitative study to assess the face-validity of potential mitigation strategies for managing medicine shortages. The interviews were transcribed, translated into English, and analysed using Leximancer. The findings from the semi-structured interviews were integrated with existing literature, to develop strategies for managing medicine shortages in Sri Lanka. These strategies were evaluated for face-validity by supply chain stakeholders, with responses analysed using descriptive statistics.

Results: A total of 69 stakeholders were interviewed, of which 37 completed the online survey. The potential causes of medicine shortages span the entire supply chain, from manufacturing to their availability at healthcare institutions. Key factors highlighted included the issue related to taxation on raw materials, medicine demand forecasting, prescribing patterns, procurement period, communication between stakeholders, supplier monitoring, delivery schedules by suppliers, product registration, and the absence of a regulatory framework for addressing medicine shortage, despite the economic crisis.

Few strategies are available to stakeholders to mitigate medicine shortages, and most were reactive rather than preventive. Many of these reactive measures were implemented in response to the economic crisis during the post-COVID-19 pandemic period, with minimum preventive

actions in place before the pandemic. The proposed strategies and improvements for managing medicine shortage were aligned with supply chain activities. All stakeholder groups were consistent in agreeing with the appropriateness, feasibility, and benefit of these proposed strategies to support and improve management of medicines shortages in the Sri Lankan State sector.

Conclusion: A strategic approach to identify the causative factors and mitigation strategies will facilitate the effective management of medicine shortages in the Sri Lankan State sector. The findings herein provide a foundation for developing a supply chain management framework to help manage medicine shortages in the Sri Lankan State sector. Further investigation is required to assess the causative factors identified by stakeholders, and the effectiveness and potential barriers to implement the proposed mitigation strategies.

Pharmacists role in traditional and complementary medicine in Saudi Arabia: Professional responsibilities and needs

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Background: Saudi Arabia has a long history of utilizing traditional medicine practices and medicinal products. As the evidence base builds to support beneficial effects with positive health outcomes associated with some T&CM, concerns about the quality of T&CM products, and the evidence-base to guide safe and effective use remain. A study reported that 92.3% of Saudi Arabians with a chronic condition taking T&CM products were at a risk of one drug-herb interaction. Pharmacists across eight countries, including Saudi Arabia, generally agree on including T&CM products in their scope of practice. This study aimed to investigate the perspective of pharmacists in Saudi Arabia about their responsibilities associated with T&CM products, and the support required for integration into their professional practice.

Methods: A cross-sectional online survey of pharmacists in Saudi Arabia was conducted in 2024, guided by the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) and the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). The study followed a published protocol, and built on a previous cross-country study. The questionnaire was informed with literature published in 2017 and 2022. Descriptive analysis was performed, and qualitative data between groups was evaluated using Pearson's chi-square test, with results considered statistically significant at $p < 0.05$.

Results: Out of 492 registered pharmacists who attempted the questionnaire, 400 valid responses were received equating to a 81.3% completion rate. Of the 400 participants, 338 (84.5%) were male, and 206 (51.5%) aged between 31-39 years. Over 30% of the participants (n=132) indicated that education about T&CM products was not included or not sufficiently comprehensive during their undergraduate training to inform their practice, while 87.8% (n=351) indicated that T & CM products were included in their daily practice. At least 64% (n=257) believed that T&CM products should fall within the scope of pharmacy practice, including herbal ingredients (81.3%), nutritional products containing vitamins and/or minerals and amino acids (65.8%), and non-vitamin and mineral supplements (56.0%). Most pharmacists agreed on several responsibilities regarding T&CM products, including informing consumers of potential risks (69.8%), providing accurate effectiveness information (68.5%) and routinely inquiring about T&CM products use by those taking pharmaceutical medicines (68.3%). The factor about whether T&CM products were involved in their daily practice is a significant factor influencing participants level of agreement on each professional responsibility (all $p< 0.001$). Additionally, participants mostly supported the need for developing T&CM product practice standards (70.8%), clearer definitions of pharmacists' responsibilities (69.0%), and improved regulatory standards for T&CM quality and safety (68.2%).

Conclusion: Undergraduate training in T&CM was considered comprehensive by many pharmacists in Saudi Arabia. However, their perception about T&CM products in day-to-day professional practice suggests there are gaps in education and professional competencies in this area. In line with this, there is a need to define pharmacist's professional responsibilities within the local context of Saudi Arabia to ensure such responsibilities and competencies are relevant to the cultural setting and are relevant for the people it serves.

Tackling pharmaceuticals household waste in the United Arab Emirates

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Introduction: Medications are essential for treating diseases and improving health; however, the increasing consumption of pharmaceuticals has led to a significant rise in medication waste. This waste can occur at various stages of the pharmaceutical supply chain, including prescribing, dispensing, and patient adherence. Improper disposal of medications, such as discarding them in household waste or flushing them, has environmental and economic consequences. The issue is particularly relevant in the Gulf Cooperation Council (GCC) countries, where population growth and increased medication use contribute to the challenge. The lack of structured disposal programmes exacerbates the problem, raising concerns about sustainability and environmental impact. Addressing household medication waste is crucial to mitigating these risks and promoting responsible pharmaceutical use.

Method: This study aims to examine the extent of household pharmaceutical waste in the UAE and explore policy solutions by benchmarking global best practices. A literature review was conducted using key academic databases (PubMed, CINAHL, Medline-Ovid, ProQuest, Scopus, Web of Science) and grey literature sources, focusing on keywords such as "pharmaceutical waste disposal," "leftover medication," and "disposal policies." Reports from organisations such as the World Health Organisation (WHO), the European Union (EU), and the Organisation for Economic Co-operation and Development (OECD) were reviewed. Additionally, UAE government websites, including those of the Ministry of Health (MOH), Department of Health (DOH), and Dubai Health Authority (DHA), were examined for existing medication disposal policies.

Results: Several policy recommendations were identified to address the issue of household medication waste in the UAE: Promoting Responsible Prescribing and Public Awareness: Implementing prescription monitoring programmes and physician incentives for responsible prescribing can reduce unnecessary medication use. Public awareness campaigns on proper medication disposal and eco-labelling can encourage accountable consumer behaviour.

Establishing Take-Back Programmes: Setting up medication take-back programmes in pharmacies and healthcare facilities would provide safe disposal options. Various models, including permanent collection sites and mail-back programmes, can be explored.

Pharmaceutical Circular Innovation Model: Introducing a circular approach, such as Reverse Vending Machines (RVMs), can facilitate the repurposing of unused medications. This initiative requires collaboration amongst stakeholders, including healthcare professionals, regulators, and insurance companies.

Conclusion: Household pharmaceutical waste presents environmental, economic, and public health challenges. Addressing this issue requires a multi-stakeholder approach, long-term investment, and innovative policy interventions. The UAE can leverage existing infrastructure to develop national medication disposal policies, raise public awareness, and implement sustainable pharmaceutical waste management solutions. Future research should focus on assessing pharmaceutical waste's environmental and health impacts in the UAE.

Co-designing a family centered medication management tool to support caregivers of medically complex children during the hospital to home transition period

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Introduction: Children with medical complexity (CMC) are a medically fragile subset of pediatric patients with chronic conditions, with intensive healthcare needs including use of multiple and complex medication regimens. Some also have nutritional needs met via enteral feeding tubes or total parenteral nutrition. Family caregivers shoulder the burden of managing medications and other healthcare tasks following discharge from a hospital. Although such caregivers may receive discharge education while in the hospital, many report feeling overwhelmed with the tasks involving complex medication regimens once they return home, suggesting a need to tailor caregiver education and support tools that consider the realities of caring for a medically complex child at home.

Method: This is part of a NIH-funded, mixed-methods design study aimed at developing and testing a family centered tool to improve medication safety for CMC. Results presented here are from the qualitative portion of the project in which family caregivers of CMC, recruited from a tertiary care children's hospital in the Midwest Unites States, were interviewed during their hospital stay, followed by two additional interviews along with observations conducted in the home setting following discharge. Interviews were designed to explore family caregivers' goals, concerns, activities, systems, and routines related to their child's medications and how these unfold over time, as they navigate the hospital-to-home transition period. Insights gained from these interviews were captured in the form of individual family journey maps. Individual journey maps informed a consolidated journey map to help distill care gaps and needs

identified by caregivers, which in turn were used by the research team to develop design requirements for the family centered tool.

Results: A total of 20 family caregivers of CMC ranging from 2 weeks old through 17 years were included in the study. Distinct needs were identified by caregivers during hospitalization and following return to home. While in the hospital and around the peri-discharge period, caregivers identified needs for learning about medication schedules; advocating for their child's needs (e.g., confidence in asking questions); sharing information with clinicians and family members; practicing skills (e.g., measuring liquid medications); and obtaining medications and critical supplies before leaving for home. During the post discharge period, caregivers demonstrated a need for systems and tools that support: i) organizing care delivered in the home (e.g. adapting and implementing medication administration routines, coordinating care among household members); ii) keeping track of events, medications, and supplies (e.g., clinic appointments, medication refills); iii) documenting and sharing information; iv) anticipating, dealing with, and managing surprises (e.g., adverse events, medication stockouts); and v) storing and organizing medications and supplies. Additional details will be presented through photography.

Conclusion: Pharmacists and other healthcare professionals are often unaware of what transpires in the home environment of patients. Medication practices and systems developed by family caregivers provide valuable insights to identify safety risks and develop family support tools. Findings allowed the research team to develop design requirements, which are currently being leveraged in an ongoing multi-step, participatory co-design process to develop a prototype tool to support family caregivers of CMC.

Global collaboration to identify priority medicines in endocrinology: Development of applications for consideration by the WHO Expert Committee on the Selection of Essential Medicines

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Introduction: The World Health Organization (WHO) mortality data base reports that globally, endocrine conditions account for 0.6-1.6% of all deaths annually, disproportionately affecting children. Many endocrinopathies are lifelong and life limiting but can be effectively managed by readily available and often cost-effective medicines that improve quality of life, prevent complications and decrease morbidity and mortality. Limited access to medicines is commonly preventing management of these conditions, especially in low- and middle-income countries. Inclusion of a medicine in the WHO Essential Medicines List (EML) positively influences inclusion of medicines in national essential medicines lists.

Purpose: This abstract, as part of a wider project on global access to medicines, explores the priority-setting, processes and outcomes of undertaking a comprehensive review of a specific chapter of the WHO EML/EMLc.

Method: In 2021, Global Pediatric Endocrinology and Diabetes (GPED) and the International Society of Endocrinology (ISE) leads took the initiative to assemble a virtual working group of global professionals with expertise in paediatric and adult endocrinology/diabetes. This was a voluntary project independent of WHO. The aim was to perform a comprehensive review of the WHO EML and EML for children (EMLc) section related to endocrinology and diabetes (Section 18. MEDICINES FOR ENDOCRINE DISORDERS). Subgroups of paediatric and adult endocrinologists from five continents were created to develop summary overviews of key areas, relevant medicines and WHO EML status of the identified medicines.

The scoping exercise identified eight clinical themes to be explored: adrenal disorders, gonadal hormones and reproduction, diabetes, hypoglycaemia, thyroid disorders, bone and calcium metabolism, pituitary disorders and obesity.

Results: Experts identified the following priority review areas: pituitary conditions, hypoglycaemia, bone and calcium disorders, adrenal diseases and diabetes. A comprehensive list of medicines associated with conditions within the categories was created and the group reviewed global availability and the clinical and cost effectiveness considerations for each medicine.

Subsequently they concluded that: (1) no endocrine medicines should be deleted from the current EML/EMLc; (2) two modifications should be made for recognised usage (zoledronic acid, insulin cartridges), and (3) ten new medicines (calcitriol/alfacalcidol, phosphate, ketoconazole, bromocriptine/cabergoline, octreotide/lanreotide, somatropin and estradiol) should be added. Using the template requested by WHO, nine applications, were submitted for consideration by the 2023 Expert Committee in Essential Medicines.

Rationalisation of the recommended medicines focussed on themes of priority populations for gain in clinical benefit, clinical evidence, international availability of the medicine, acquisition cost in comparison to other medicines in the same drug class or used for the same condition.

Conclusion: Global collaborations of clinical experts can collectively develop a regionally informed strategy for

reviewing access to medicines and create a comprehensive review of medicines within a clinical area.

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The European drug shortages formulary: monographs and technical recommendations to mitigate medicine shortages

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Introduction: Pharmacists are on the frontline of efforts to mitigate the negative effect of medicines shortages. To support them, the European Directorate for the Quality of Medicines & HealthCare (EDQM) has launched the European Drug Shortages Formulary (EDSForm) initiative. Its objectives is to help pharmacists prepare standardised, unlicensed pharmaceutical preparations as temporary substitutes for unavailable medicines:

•technical recommendations developed during ongoing shortages,
•monographs of the formulary developed before shortages occur.

Method: A working party (WP), composed of 20 European experts, was set up and started its work in January 2024. The experts considered the needs, capabilities, and regulatory constraints of pharmacists in European Member States. They were tasked with establishing two distinct frameworks outlining the scope, content and elaboration processes for the technical recommendations and for the monographs.

Results: By November 2024, the frameworks had been fully prepared, and the first practical outcomes elaborated to best serve pharmacists.

Technical recommendations are a list of existing licensed medicines, recommendations and unlicensed pharmaceutical preparations that have been or are being prepared to alleviate the lack of appropriate licensed products. They are aimed at assisting healthcare professionals in their decision-making process. They will be developed within a short period of time and would be available free of charge on the EDQM website during shortages.

Already, two technical recommendations for aprepitant oral liquids and paediatric forms of amoxicillin, for which critical shortages and supply difficulties had been reported, have been published in 2024.

Monographs of the formulary are texts describing methods for the preparation and quality control of standardised unlicensed pharmaceutical preparations that could be used as a temporary replacement for potentially unavailable, essential licensed medicines. Selected formulations will be experimentally verified to consolidate existing data and to generate critical data. Drafted monographs will be submitted to public consultation before being published free of charge on the EDQM website. The monographs will benefit pharmacists by providing them with verified preparation and QC methods, facilitating, for instance, risk analysis performed prior to the production of stock/magistral preparations. An initial prioritisation exercise highlighted 7 monographs to be elaborated: paracetamol oral liquid, furosemide injectable, metronidazole oral solid, co-trimoxazole oral liquid, amoxicillin oral solid, methotrexate injectable, rifampicin oral liquid. Work on those monographs is underway, and the Formulary is expected to be launched by the end of 2025.

Conclusion: While preference should be given to the use of licensed medicinal products, unlicensed pharmaceutical preparations may fill a gap in certain cases. The work of the EDSForm WP will benefit community or hospital pharmacists by helping them prepare, when needed, standardised magistral or stock preparations. The EDSForm WP will continue developing additional technical recommendations in response to emerging shortages situations and will work toward elaborating EDSForm monographs that are useful for pharmacists. To understand their current and potential needs, the EDQM invite pharmacists to contribute to this work, whether in the form of comments during future public consultations on the first draft monographs or by proposing formulations with a view to building the future work programme.

Evaluation of the hub and spoke model for antimicrobial stewardship implementation

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Introduction: Funded by the UK Department of Health and Social Care's Fleming Fund using UK Aid and managed by the Commonwealth Pharmacists Association (CPA) and Global Health Partnerships (GHP), the Commonwealth Partnerships for Antimicrobial Stewardship (CwPAMS) supports antimicrobial stewardship (AMS) interventions across 74 health facilities in eight African countries: Ghana, Kenya,

Malawi, Nigeria, Sierra Leone, Tanzania, Uganda, and Zambia. Eight partnerships participated in the Hub and Spoke model (HSM), where hubs served as centres of excellence providing resources, training, and guidance to improve AMS capacities at spoke sites. This study explores the implementation of the HSM and identifies specific barriers and facilitators affecting its effectiveness in delivering AMS interventions within the CwPAMS programme.

Method: A qualitative research design was employed for this evaluation. Semi-structured interviews were conducted between August 2024 and February 2025. The interview guide was theoretically grounded in the Consolidated Framework for Implementation Research (CFIR) and RE-AIM Framework to enhance methodological rigor and enable structured assessment of implementation processes. We used purposive sampling to represent multiple stakeholder perspectives including implementation teams, grant managers, in-country consultants, technical specialists, and hub site leadership personnel directly involved in model implementation. All interviews (n=16) were digitally recorded, transcribed verbatim, and subjected to thematic analysis using ATLAS.ti qualitative data analysis software. This study was part of internal quality improvement hence no ethical approvals were obtained.

Results: Effective HSM model implementation requires hubs with substantially greater resources and clear roles in knowledge transfer and capacity building. Programme effectiveness was impacted by model misinterpretation, unrealistic resource sharing expectations from the hub, and inadequate communication plans. Implementation barriers included the high number and wide geographical spread of spoke sites, insufficient leadership buy-in at spoke sites, lack of budget transparency, problematic power dynamics (e.g., junior hub staff leading training), overly ambitious monitoring and evaluation (MEL) plans, lack of microbiology laboratory capacity at spoke level, and limited resources such as staffing turnover, low enthusiasm, insufficient protected time, and competing quality improvement projects. Implementation quality assessment becomes problematic with hub-centralized reporting. Clinical workload created adoption barriers for practitioners already burdened with service delivery. Despite variable outcomes, partnerships demonstrating highest effectiveness typically featured well-established organisational relationships, dedicated project managers, institutional and policy maker buy-in and senior management engagement. Clear legitimacy of hubs as centres of excellence via policy maker support, pre-existing organisational relationships among partners, and dedicated project managers or teams at hub sites strongly enabled effective adoption. Prior relationships with the spokes facilitated initial communication and MEL planning. Maintenance of interventions and activities as part of the programme requires addressing high staff turnover, protected time allocation, incentivization of staff to improve enthusiasm deficits and minimizing the impact of competing quality improvement initiatives.

Conclusion: The hub and spoke model implementation require adaptive strategies tailored to specific contexts, with success dependent on strong hub capacity, engaged leadership, policy maker buy-in, clear communication channels, and designated focal persons at each facility. Effective implementation demands continuous monitoring and coordination to overcome contextual challenges including geographic distances, administrative and motivation barriers, and staffing constraints.

An assessment of the implementation of national AIDS/STI control programme 2019 consolidated guidelines for HIV care in antiretroviral therapy sites in Ghana: the pharmacists' perspective

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Introduction: The implementation of evidence-based guidelines on antiretroviral medication therapy is critical to the attainment of the Joint United Nations Programme's HIV/AIDS 95-95-95 goal. Policy implementation is often hindered by the knowledge, perceptions and experiences of policy implementers. The consolidated guidelines for HIV care in Ghana that was launched in 2019 introduced several evidence-based updates for the care of People Living with HIV/AIDS. Three key interventions included in the 2019 consolidated guidelines were the transition to Tenofovir/Lamivudine Dolutegravir (TLD) as the preferred first line option for adults and adolescents, the introduction of Tuberculosis Preventive Therapy (TPT) and the roll out of differentiated service delivery (DSD). The implementation of the guidelines had not been assessed from the perspective of pharmacists involved in antiretroviral therapy in Ghana since the introduction of the guideline.

The objective of the study therefore was to assess the knowledge, perception and experience of pharmacists involved in antiretroviral therapy service delivery in Ghana on the implementation of the 2019 consolidated guidelines for HIV care.

Methods: A cross-sectional, descriptive study based on health systems research approach was used. Mixed methods were used to obtain both qualitative and quantitative data from pharmacists who had experience in antiretroviral

therapy service delivery in Ghana. Qualitative data was obtained and analysed by conducting in-depth interviews with seven (7) pharmacists who were key informants (KI) and using a framework analysis approach respectively. Quantitative data was obtained through an electronically self-administered survey of eighty-nine (89) pharmacists involved in ART programme implementation across fourteen of the sixteen administrative regions of Ghana. Quantitative data was summarized in frequencies and percentages & analysed for significant associations between the demographic characteristics and pharmacists' knowledge of the guidelines using Pearson's Chi Square statistics. Mean scores for a knowledge scale (tested using the Kuder-Richardson scale) were calculated for each participant and participants with a score below the mean were deemed to have inadequate knowledge while those with values equal or greater than the mean were deemed to have adequate knowledge of the guidelines.

Results: Majority of pharmacists had adequate knowledge of the guidelines for HIV care though there were a few gaps in their knowledge on the TLD transition, TPT and DSD. Most pharmacists held the view that the implementation of the guidelines was good and that they had been supported by the NACP to roll out the guidelines.

Conclusion: Pharmacists had a good knowledge of the guidelines with a few notable gaps. In the pharmacists' perception and from their experiences with the implementation of the guidelines, the transition to the new consolidated guidelines was good despite a few challenges.

Qualitative study on public psychology in medical emergency decision-making: Focusing on clinical trial participation

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Introduction: Decision-making regarding treatment during medical emergencies is a critical issue that can determine patient survival. Rapid decision-making is essential in conditions such as the hyperacute phase of stroke, where the therapeutic window is extremely limited. Moreover, in the absence of an established treatment, clinical trials may become a viable option, requiring patients to decide on participation. However, for laypersons with no medical background, making an informed decision in such circumstances is expected to be challenging. Nevertheless, few studies have explored the psychological factors influencing such decisions. This study investigates public perceptions of clinical trial participation in medical emergencies.

Methods: A web-based survey was conducted with 300 non-medical individuals 20 years of age or older. Participants were asked to imagine a scenario in which they were hospitalised because of intracerebral haemorrhage and invited to participate in a clinical trial. The survey collected responses regarding participants' willingness to participate and their reasoning. Among the respondents, 261 provided valid written explanations, which were qualitatively analysed. Participants were categorised into three groups: those willing to participate (willing group), those unable to decide (undecided group), and those unwilling to participate (unwilling group). Their responses were analysed using SCAT (Steps for Coding and Theorisation) to extract relevant themes.

Results: Qualitative analysis identified 34 perspectives and 220 conceptual elements. The willing group viewed clinical trials as a potential means of survival and tended to decide based on trust in medical professionals. The undecided group found it difficult to make an immediate decision in an urgent situation and expressed concerns about making such a choice alone. The unwilling group exhibited reluctance due to the uncertainty surrounding clinical trials.

Conclusion: These findings suggest that individuals who prioritise survival at any cost are more inclined to participate in clinical trials. Additionally, trust in medical professionals can lead individuals to follow medical advice even if they have an incomplete understanding of the details. Conversely, time constraints and the inability to consult others make decision-making particularly challenging. Furthermore, those who experience strong anxiety or general apprehension about the unknown are more likely to refuse to participate. These results highlight the need for medical professionals to acknowledge patients' concerns, facilitate communication within a limited timeframe, and respond so that patients feel comfortable seeking guidance without hesitation.

Pragmatic evaluation of Alberta Pharmacy Care Clinics (PATIO Study): A survey exploring pharmacists experiences

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Introduction: Pharmacy care clinics are a new environment where pharmacists provide direct patient care services such as medication review, immunization and patient consultations. While the scope of practice and services remain unchanged, the distinction lies in the modified practice environment. In Alberta, pharmacy care clinics

operate under the same legislative framework as traditional community pharmacies, but with enhanced infrastructure to support clinical service delivery. This study aimed to explore the experiences of pharmacists working in pharmacy care clinics in Alberta, Canada.

Methods: This was an online, anonymous, cross-sectional, census-sample, survey conducted between June - September 2024 as part of a pragmatic mixed-methods evaluation. Pharmacy care clinics were defined as a community pharmacy that has completed a physical renovation to modify their floor plan to increase the allocated space dedicated to pharmacy services. Eligible pharmacies were identified by the Alberta College of Pharmacy's approved renovation list. All pharmacists who had worked two or more shifts in the pharmacy care clinic were invited via email to complete a questionnaire about their experiences. Questions included details of the renovation and environmental changes made, roles and services provided, and their perspective on the differences to community pharmacy according to our POWER framework (Potential, Opportunity, Wellbeing, Environment, and Resources). Descriptive statistics were analysed using SPSS software. Respondents received a $25 gift card. This study was approved by the University of Alberta Human Research Ethics Board (Pro00134980).

Results: A total of 64 pharmacies were contacted and 113 pharmacists completed the survey. Of the 93 participants that provided demographics, 61.3% were Canadian trained and 38.7% were internationally-trained. The majority of participants (89.3%) had their advanced prescribing authority and were between the ages of 30-45 (57.1%) years. The most common pharmacist services provided were Injections/vaccines, prescription renewals/refills, and Point-of-Care Testing (20.3%, 20.3%, and 20%, respectively). The most common clinical conditions seen were strep throat, urinary tract infections, and acute infections (25.2%, 23.4%, and 13.5%, respectively). Pharmacists reported high levels of agreement regarding Potential (mean 20.1, SD 2.5, range 9–25), Opportunity (mean 16.9, SD 2.9, range 8–20), Wellbeing (mean 39, SD 5.2, range 23–45), Environment (mean 28.3, SD 4.1, range 13–35), and Resources (mean 21.4, SD 2.6, range 15–25).

Conclusion: Respondent pharmacists were highly active in patient assessment, prescribing, and education. The pharmacy care clinic model has been well received and pharmacists report high Potential, adequate Opportunities, high-levels of Wellbeing, positive Environment, and supportive Resources when working in this setting. The results will be used to inform the continued development and refinement of this model of practice.

Evaluating the effectiveness of the 'Think Pharmacy First' Campaign in the UK: Public awareness, engagement, and challenges in enhancing community pharmacy utilization

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Introduction: The Think Pharmacy First campaign was introduced as part of the NHS's Help Us, Help You initiative to encourage patients to visit community pharmacies instead of GPs or emergency services for minor ailments. The goal was to reduce strain on primary care while improving accessibility to immediate treatment for conditions such as sinusitis, sore throat, earache, and uncomplicated urinary tract infections. However, despite the campaign's objectives, public awareness and trust in pharmacists' expanded roles remain low. This study evaluates the campaign's effectiveness in influencing public behavior, the challenges in engagement, and the barriers to wider adoption, with a particular focus on cultural perceptions, campaign messaging, and accessibility.

Method: A qualitative research design was employed, using semi-structured interviews with 25 participants aged 20–40 in Manchester, UK. Participants were from diverse cultural backgrounds, representing Asia, Europe, the Middle East, and North America. Data collection focused on public awareness, engagement with the campaign, trust in pharmacists, and perceived accessibility of the service. A thematic analysis was conducted, categorising responses into key themes such as awareness levels, campaign outreach, effectiveness of messaging, cultural barriers, and accessibility concerns.

Results: The study revealed several key findings: The Think Pharmacy First campaign faces significant challenges in raising awareness and engagement. Low Public Awareness:

•72% (18 participants) had never heard of the campaign before the study.
•Lack of promotion via social media and digital platforms was cited as a major issue.
•Traditional posters, billboards, and TV ads were found ineffective, especially among younger and non-UK residents, who rely on online content for information. Limited Service Utilization:
•84% (21 participants) had never used Pharmacy First.
•Most participants only visited pharmacies for over-the-counter medication, unaware that pharmacists can now prescribe medication for certain conditions.
•16% (4 participants) who had used the service found it convenient but questioned pharmacists' diagnostic expertise compared to GPs.

Trust and Cultural Perceptions of Pharmacists:
•Participants from countries where pharmacists mainly dispense drugs expressed skepticism about their expanded

roles.
•Many believed GPs were more qualified, perceiving pharmacists as retailers rather than healthcare providers, leading to reluctance in using the service.
Mismatch Between Campaign Messaging and NHS Realities:
•Participants criticized the campaign for portraying pharmacies as an alternative to GPs, yet many were referred back to GPs after consultations.
•Concerns were raised about pharmacists' ability to diagnose symptoms accurately for conditions requiring thorough assessments.

Barriers to Accessibility:
•Non-native English speakers struggled with campaign materials containing medical jargon (e.g., "UTI").
•Working professionals and students preferred digital outreach (Instagram, TikTok, Google Ads) over traditional marketing.

Conclusion: The Think Pharmacy First campaign has potential but faces challenges due to low awareness, cultural biases, and trust issues. To improve engagement, the NHS should enhance digital outreach, clarify pharmacists' qualifications, improve service accessibility, and use culturally tailored messaging. Addressing these barriers will increase public trust, boost campaign effectiveness, and encourage better utilization of community pharmacy services, ultimately reducing NHS workload and improving healthcare access.

A conceptual framework for establishing a dedicated sport pharmacy service in health care systems

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Introduction: Sports pharmacy is an emerging specialty that addresses the pharmaceutical care needs of athletes, ensuring safe medication use, injury management, and compliance with anti-doping regulations. Despite its importance, limited structured education and clinical frameworks exist for integrating sports pharmacists into healthcare systems. Previous studies highlight significant gaps in pharmacists' knowledge of the World Anti-Doping Agency (WADA) guidelines, emphasizing the need for dedicated training and service models. This study proposes a structured framework for implementing sports pharmacy services within healthcare systems to enhance medication safety, optimize pharmaceutical supply chains, and improve adherence to anti-doping regulations.

Methods: A four-phase methodology was employed to establish a dedicated sports pharmacy service:
1.Gap Analysis & Stakeholder Engagement: A multidisciplinary team reviewed medication use patterns, clinical workflows, and anti-doping compliance logs. A structured needs assessment identified key deficiencies in medication safety and regulatory adherence.
2.Regulatory Alignment & Protocol Development: WADA guidelines informed standardized medication selection protocols, supplement evaluation, and documentation processes, integrating them into electronic medical records (EMRs).
3.Competency Assessment & Staff Training: Pharmacists underwent knowledge assessments and targeted training on WADA regulations, supplement safety, and therapeutic risk management.
4.Implementation & Continuous Improvement: A clinical sports pharmacist was embedded within the healthcare team, providing medication oversight, compliance checks, and ongoing quality improvement audits.

Results: The framework demonstrated improvements in medication management and regulatory compliance. Key outcomes included:
•Enhanced Supply Chain Efficiency: A structured pharmaceutical supply chain ensured safe storage, labeling, and distribution of medications in compliance with WADA standards. Integration of look-alike, sound-alike (LASA) medication safety measures and automated dispensing cabinets (ADCs) reduced dispensing errors.
•Technology-Driven Compliance: EMRs and ADCs integrated with WADA medication alerts minimized the risk of inadvertent doping violations. Therapeutic Use Exemption (TUE) documentation in digital records improved accessibility for prescribers and pharmacists.
•Clinical & Educational Impact: Competency assessments identified critical knowledge gaps, guiding tailored training programs. Pharmacist-led anti-doping education enhanced awareness among athletes, healthcare providers, and sports professionals.
•Governance & Policy Development: Pharmacy & Therapeutics (P&T) Committees oversaw formulary management, ensuring athlete-safe medication selection. Drug information services provided real-time guidance on prohibited substances and supplement risks.

Conclusion: The integration of sports pharmacy services within healthcare systems enhances medication safety, optimizes pharmaceutical supply chain management, and ensures anti-doping compliance. Establishing structured protocols, leveraging technology for regulatory adherence, and investing in pharmacist training are essential for advancing sports pharmacy. This framework provides a scalable model for healthcare institutions seeking to incorporate specialized pharmaceutical services for athletes. Future research should evaluate long-term implementation outcomes and explore strategies to expand sports pharmacy education and professional development.

Exploring patient safety climate of Ontario hospital pharmacies in Canada

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Introduction: A culture of safety is important for improving patient safety and patient care. Safety climate questionnaires, which provide a snapshot of safety culture, have not been reported in the literature for hospital pharmacy practice in Ontario, Canada. The objective of this study was to perform a descriptive, cross-sectional exploration of Ontario hospital pharmacy patient safety culture.

Method: This study was conducted using the Agency for Healthcare Research and Quality (AHRQ) Hospital Survey on Patient Safety Culture (HSOPSC) 2.0, consisting of 10 composite measures (from "Communication About Error" to "Teamwork"). An additional demographic section was added to the AHRQ HSOPSC 2.0 to reflect Ontario-specific demographic contexts. The online questionnaire was posted on LinkedIn, Facebook, and X, in March 2024, and engaged by the Ontario College of Pharmacists and the Canadian Society of Hospital Pharmacists Ontario Branch, on the same social media platforms, for hospital pharmacy professionals' anonymous and voluntary participation. Descriptive statistics were used to analyze quantitative data and thematic analysis was applied to free-text responses accordingly.

Results: Sixty-three responses (75% pharmacists, 25% pharmacy technicians) were received with majority (54%) from the Toronto Region. An overall positive patient safety culture was perceived by most pharmacy professional respondents (4.8% rated as excellent; 34.9% very good; 33.3% good; 17.5% fair; and 9.5% poor). Of the 10 composite measures, "Teamwork" and "Supervisor, Manager, or Clinical Leader Support for Patient Safety" were the top two, while "Handoffs and Information Exchange" was the lowest. Staffing, compensation, and ease of error reporting were identified from the free-text responses as important facilitators for advancing patient safety climate. From the Ontario-specific demographic subgroup analysis, it was found that pharmacy professionals with over 20 years of experience reported a more positive perception of patient safety culture when compared to colleagues with fewer number of years of practice in the profession.

Conclusion: Ontario hospital pharmacy patient safety culture was generally positively perceived by pharmacy professionals. Teamwork, peer, and leader collaboration could be leveraged to address patient safety gaps at transition points of care, such as handoffs. Extrapolation of findings from this study to the rest of Ontario was limited due to its small sample size and responses primarily from Toronto practitioners. Going forward, patient safety climate could be explored using qualitative research methods for further insight, followed by development of potential interventions.

Challenges in accessing difficult-to-source medicines

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Introduction: Shortages of medicines are experienced worldwide, with the cause being both supply and demand related. BREXIT heavily influenced the supply of medicines to some countries whilst COVID-19 led to challenges in accessibility to medicines. The development of long-term mitigation strategies contributes to delivering patients their required medicines, both critical medicines and others in a timely manner

The aim of this study was to conduct an evaluation of the situation in Malta regarding medicines shortages through feedback from community pharmacists, and to identify challenges in accessing difficult-to-source medicines.

Method: A semi-structured questionnaire consisting of 3 sections: Participant Details, Experience with medicine shortages and Case Studies, was developed. The impact a shortage had on both the patients and the pharmacists themselves, as well as the solutions implemented in each case were investigated. Following validation, the questionnaire was registered with the University Research Ethics Committee and dissemination to community pharmacists chosen by convenience sampling was carried out. After data collection and analysis, interviews with national health service pharmaceutical procurement officers were held to obtain further insight on difficult-to-source medications.

Results: A total of 125 pharmacists answered the questionnaire (35 male, 90 female). The greater part of respondents (n=85) experienced 6 to 8 shortages per month. Pharmacists listed 131 medications in the private sector and 44 medications in the national health service being in shortage. In cases of shortage of medicines, pharmacists either contacted the prescriber or else dispensed an alternative: same medication but of a different strength, same class or therapeutic indication of medicine but a different active pharmaceutical ingredient. An alternative medication was offered to 188 patients, 47 of which did not accept alternative due to concern to their wellbeing. Interviews held with procurement officers revealed 3 main challenges in sourcing medications: 1) Malta, being a small market. Suppliers many times prefer to supply medicines to other countries having a larger population. 2) By grouping small orders together, the supply would reach our country however at a delay. These 2 challenges cause short-term

shortages. BREXIT obliged wholesalers to outsource medications from other countries other than the UK. Certain medications are short in supply due to the lengthy process involved in engaging alternative suppliers willing to deliver to Malta. In justified health needs, medications with foreign labels are accepted by wholesalers. Having to add English labelling adds up to the cost of the medication, which is the third main challenge faced by procurement officers in Malta. Patients are also impacted since higher priced products are put on the market.

Solutions offered include actively searching for alternative suppliers, making and maintaining relationships with procurement officers worldwide and having at least a 6-month buffer stock for the projected consumption.

Conclusions: Results highlight the need of long-term mitigation strategies, in view that even when a replacement is available, patients do not always accept an alternative. Challenges must be overcome. Developing guidelines and a clear-cut crisis management plan is a way forward.

Internet pharmacies serving the international community

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Introduction: The rise of internet pharmacies has significantly transformed the pharmaceutical industry, offering convenient access to medications while presenting challenges in regulation, safety, and quality control. Although online pharmacies enhance affordability, accessibility, and privacy, they also contribute to public health risks, including counterfeit medicines, lack of pharmacist intervention, and unauthorized sales of prescription drugs. Regulatory frameworks for internet pharmacies vary globally, creating inconsistencies in patient safety measures and enforcement. Understanding the benefits, risks, and regulatory gaps is crucial to ensuring the safe and effective use of internet pharmacies worldwide. This study aimed to evaluate the impact of internet pharmacies on healthcare, focusing on consumer accessibility, regulatory challenges, and risks of counterfeit medications. The research identifies differences in national regulatory approaches and assesses the effectiveness of existing frameworks in safeguarding public health.

Method: A systematic literature review was conducted following the PRISMA protocol, analyzing studies from HyDi, PubMed, and Medline. The research focused on eight countries (Germany, Hungary, Jordan, Malta, Saudi Arabia, United Arab Emirates, United Kingdom and United States of America) to provide a global perspective. Studies were selected based on their relevance to internet pharmacy accessibility, regulatory frameworks, and public health risks. Key areas of analysis included medication affordability, counterfeit drug prevalence, pharmacist oversight, and illegal online pharmacy operations.

Results: The initial search identified 198 studies, of which 36 met the inclusion criteria after screening and full-text analysis. Findings indicate significant differences in public perception and regulatory enforcement across countries. Internet pharmacies are widely accepted in Saudi Arabia and the UK, whereas traditional pharmacies remain dominant in Hungary, Malta, and Jordan. Additionally, 43% of US-based and 95% of UK-based online pharmacies were found to be operating illegally. Consumers cited cost savings, convenience, and privacy as major reasons for purchasing medications online. Key risks included exposure to counterfeit drugs, incorrect labeling, absence of pharmacist consultation, and the sale of restricted medications without prescriptions. Regulatory approaches varied widely: A voluntary logo scheme enhances consumer trust and safety (United Kingdom); a Pharmacy Seal enforces strict national regulations (Germany); Developing a regulatory framework to control online medicine sales (Jordan); Only brick-and-mortar pharmacies can legally sell medications online (Hungary); Online medicine purchases are limited to personal use (Malta); Only licensed pharmacies can operate online under government supervision (United Arab Emirates); Electronic prescriptions are mandatory under strict regulations (Saudi Arabia); Verified Internet Pharmacy Practice Sites accreditation ensures compliance with federal and state laws (United States of America).

Conclusion: The absence of global regulatory consistency increases the potential for illegal drug sales and counterfeit medicines. Stronger international collaborations, improved pharmacist involvement, and stricter online verification processes are necessary to mitigate these risks. Governments and healthcare professionals must work together to enhance regulatory oversight, educate consumers, and implement advanced safety measures.

Pharmaceutical policies and social participation in health: The role of official health conferences in Brazil

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Introduction: Social participation plays a pivotal role in the development of public health policies in Brazil. Health Conferences serve as key moments of public consultation and social mobilization, occurring every four years and progressing from local to municipal, state, and national levels, where the discussions address the current health context and its connection to the Unified Health System (SUS). These

conferences bring together health system patients, healthcare professionals, and public health managers to dialogue, formulate, and approve proposals that shape public policies in response to social demands. This study aims to analyze how the National and States Health Conferences address pharmaceutical policies and services as well as science, technology, and innovation in healthcare.

Method: This study is an ongoing document analysis, focusing on reports from State Health Conferences held in 2023 across all Brazilian states, along with the report from the National Health Conference, also held in 2023. The initial search for these reports was conducted on the websites of state health councils and state health departments, followed by a formal request to the National Health Council (CNS) for reports that were not publicly available. The analysis involves identifying keywords related to pharmaceutical policy and services as well as science, technology, and innovation in these reports, followed by a categorization of the findings. It is estimated that two million people were mobilized across the country for the organization of the Health Conferences. Of these, approximately 17,000 participated in the state-level conferences, whilst 5,800 were accredited for the national conference. Among the national participants, 35% represented health system patients, and 18.6% were health workers.

Results: A total of 23 out of 28 expected reports were retrieved from the search results. The keyword search identified 306 state-level proposals and 117 at the national level. Furthermore, the themes were presented in varied formats within the documents, revealing disparities in how different regions conceptualize these areas of study within social participation. A considerable number of proposals focused on improving access to medicines free of charge in the health system, including expanding the range of available drugs. However, there were comparatively fewer proposals addressing pharmaceutical services, suggesting that social participation in health primarily associates pharmaceutical policy with medicines provision and health technologies. Additionally, the proposals address the need to increase healthcare funding, promote science and innovation, and improve the management of health services.

Conclusion: This study highlights the importance of social participation in shaping public health policies in Brazil, particularly in the context of pharmaceutical services and the integration of science, technology, and innovation. The findings underscore the need to strengthen social participation to ensure it is effectively considered in the operation of SUS. The proposals and recommendations from health conferences should serve as a foundation for policymakers in decision-making processes. Enhancing participation mechanisms and promoting transparency in policy formulation will not only improve the effectiveness of SUS but also contribute to the development of more inclusive and responsive public health policies.

Factors influencing the careers of recent and upcoming PhD students in social and administrative pharmacy in the United States of America

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Introduction: Graduates with a Doctor of Philosophy (PhD) degree in Social and Administrative Pharmacy (SAP) have a variety of career opportunities available to them. However, colleges and schools of pharmacy often encounter difficulties in recruiting and retaining faculty with a PhD in SAP. This study aimed to characterize the factors that influence the career choices of recent PhD graduates and those nearing graduation in the SAP field.

Methods: A prospective qualitative study was conducted in Spring 2024 with recent and upcoming graduates from SAP PhD programmes across the United States of America. The study was approved by the Institutional Review Board of the researcher university. The interview guide was developed by SAP researchers who specialize in qualitative study design and was refined based on feedback from the graduate education committee of the American Association of Colleges of Pharmacy (AACP). Participants were identified through emails sent by the AACP graduate committee and were invited to voluntarily take part in semi-structured interviews. The interviews continued until thematic saturation was achieved. All interviews were audio recorded, transcribed, and analysed thematically by two researchers who worked independently using Dedoose® software. The research team met to discuss the inductive codes and emerging themes.

Results: A total of 12 interviews were conducted, comprising 6 recent graduates and 6 upcoming graduates. The average age of the participants was 32.83 years, with a standard deviation of 6.28 years. The majority of the participants (66.7%) were female, 50.0% identified as White, and 83.3% were domestic students.

The key emerging theme identified “Factors and Experiences Related to Career Decision Making”.

The following quotations reveal the multi-faceted nature of the process graduate students undergo in establishing their career goals. For instance, participants valued gaining experience in different settings:

“I think having experiences in both places, in an academic setting and a non-academic setting, really helped me figure out what I was more interested in, or what kind of work, or what I wanted my work to look like. So, I think experience is a big driver of my decision.”

Others were influenced by their previous work experience:

“I currently work in the pharmaceutical industry... So I decided this particular path compared to other paths we have.”

Some were more favourable towards an academic career: “It wasn't particularly that I loved teaching or that I loved service, but it was more of, I would be able to focus on the kind of work that I wanted to.”

Meanwhile, others realized that an academic career was not for them: “I tried to apply to a couple of academic jobs, and I basically had a panic attack while applying. And I was like, ‘Well, okay, maybe I'll try in a year.’ But now I'm not going to touch it. Just listen to my body on that one.”

Conclusion: The findings emphasize the personal and professional experiences of SAP PhD students regarding their career decisions when confronted with multiple options. This information could provide strategies for recruiting and retaining SAP faculty.

Analysis of the satisfaction rate based on evaluation level by accreditation evaluation results of Korean pharmacy schools and factors affecting the accreditation evaluation results

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Introduction: Among the 37 pharmacy schools that received the KACPE accreditation evaluation in the past five years (2020 to 2024), 31 schools (83.8%) received ‘5-year accreditation’, 5 schools (13.5%) received ‘3-year accreditation’, and 1 school (2.7%) received ‘non-accreditation’. This study aims to analyze the KACPE pharmacy education accreditation satisfaction rate (required, recommended, excellent) by accreditation evaluation results and identify the evaluation areas that affect the accreditation results.

Method: Using the accreditation results of the KACPE Comprehensive Evaluation Report, we compared the satisfaction rate of the evaluation level (required, recommended, excellent) between pharmacy schools that received 5-year accreditation and pharmacy schools that received 3-year accreditation or non-accreditation. To test the impact of the required criteria satisfaction rate by evaluation area on the certification evaluation results, univariate logistic regression analysis was conducted. The dependent variable was certification evaluation results: 5-year Certification (1) and 3-year certification or non-certification (0). The independent variable was the satisfaction rate of the required criteria rate by area as a continuous variable.

Results: The average satisfaction level for all evaluation areas of 37 pharmacy schools was 67.0%, and the average satisfaction rate for required, recommended, and excellent criteria were 93.2%, 45.9%, and 22.5%, respectively. The average satisfaction rates for all evaluation areas of the 31 pharmacy schools that received ‘5-year certification’ and the 6 universities that received ‘3-year conditional certification’ or ‘non-certification’ were 68.7% and 58.1%, respectively. The satisfaction rates by evaluation level of the universities that received ‘5-year certification’ (required 94.9%, recommended 48.2%, and excellent criteria 23.9%) were higher than those of other universities (84.7%, 34.4%, and 15.2%). Univariate Logistic regression analysis results showed that the satisfaction rate of required criteria in the areas of "1. Mission and Ideal Personnel", "5. Faculty", and "7. Post-graduation Education" had a statistically significant correlation with the "5-year certification" results. The "5. Faculty" area showed the highest odds ratio, followed by the "1. Mission and Ideal Personnel" and "7. Post-graduation Education area.

Conclusion: To improve the quality of education at Korean pharmacy schools through improved accreditation evaluation results, it will be necessary to establish policies that enable pharmacy schools to secure quality faculty, set Mission and Ideal Personnel that fit their environment, and make efforts for the Post-graduation Education area.

An international portrait of pharmacists' professional role identities

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Introduction: Professional identities shape who pharmacists are, what they do, and what they stand for as professionals. With a changing healthcare landscape, professional identity is more important than ever. Novel research methodologies have potential to illuminate pharmacists' professional identity and roles in new and innovative ways. This study aimed to explore international pharmacists' identity through reflection on their professional roles.

Methods: Q Methodology, which uses quantitative techniques to systematically study subjectivity, was used to allow for an in-depth analysis of professional role identity. The participants were self-identified pharmacists working in patient-facing roles who attended the International Pharmaceutical Federation (FIP) Congress in Brisbane, Australia, from September 24-28, 2023. They completed Q methodology online activities, sorting professional role statements and representative photos of professional roles based on their importance to them. Q methodology allows researchers to identify and describe the shared viewpoints that exist on a topic, revealing areas of consensus and disagreement across these views. It starts with Q-sorting, where individuals articulate their own viewpoint by ranking a set of statements (the Q-set) about a particular issue. This is followed by a factor analysis to identify clusters of shared viewpoints that can then be interpreted.

Results: Twenty-one participants completed the questionnaire, representing 10 countries (five of the six World Health Organization regions), two thirds identified as women and approximately 33% practiced in hospital and 33% community pharmacy settings. Three factor arrays explained 52% of the variance. In Factor 1: Pharmacists as autonomous healthcare providers AND clinical team members, participants strongly value being part of a multidisciplinary team. Yet, this collegial nature does not diminish their perception of their autonomy as a healthcare provider, a leader, and an independent prescriber. In Factor 2: Pharmacists as healthcare providers for individual patients, meeting patients' needs is their prime value and mission. They see themselves as generalists, morphing to whatever the need of their patient is. The tangible artifact of this pharmacist identity is that the patient leaves with the dispensed medicine, or new knowledge, point-of-care test, vaccination, recommendations, or referrals; but the pharmacist's purpose is the individual patient. In Factor 3, pharmacists were in positions of management, and thus, this influenced how they saw themselves as pharmacists.

Conclusion: This study illustrates the complexity and diversity of pharmacists' professional identities, whilst also revealing commonalities in how pharmacists perceive themselves and differences in how they enact their roles based on their practice settings. It showed that pharmacists held multiple identities based on their roles and practice settings. Depending on the identity or the meaning they attributed to the roles; the same roles were enacted differently. The key focus being patients and addressing their needs, which manifests in different ways. This study offers a new perspective, revealing how various roles may converge to form a pharmacist's professional role identity: for example, autonomous healthcare providers AND clinical team members AND patient-focused practitioners AND leaders mindful of management responsibilities. Recognising the complexity of pharmacists' identities as individuals, helps to break-free from the cognitive dissonance that has plagued the profession.

Pharmacist Contribution to myHealth Portal

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Introduction: myHealth is a digital health platform used in Malta designed to improve access to medical information for both patients and healthcare professionals. Currently, pharmacists lack direct access to the portal, which limits their role in integrated patient care.

This study aimed to evaluate healthcare professionals' perception of myHealth, its potential to support pharmaceutical services, and opportunities for expanding pharmacist access.

Method: A quantitative approach was employed using a validated questionnaire distributed in English and Maltese to healthcare professionals and the general public. Additionally, a focus group comprising 8 healthcare professionals was organized to discuss opportunities for pharmaceutical service delivery through myHealth.

The study was conducted in a community pharmacy setting. The main outcome measures included perceptions of pharmacist access to myHealth, awareness and usage patterns, and suggestions for enhancing pharmaceutical services through the platform.

Results: A total of 189 responses were collected, with 37% of participants being healthcare professionals and 63% being laypersons. The majority of respondents (78%) were female, and the largest age group represented was 31-40 years, accounting for 23% of participants. Among the respondents, 95% reported having knowledge of myHealth, while 84% were aware of the services it provides. Additionally, 83% had utilized the platform, and 28% had received appointments via myHealth.

Regarding pharmacist services, 84% of participants supported granting pharmacists access to myHealth, emphasizing potential benefits such as improved medication management, enhanced care coordination, and reduced medication errors. Furthermore, 94% (n=129) agreed that pharmaceutical services provided in pharmacies should be recorded in myHealth data, ensuring a more comprehensive patient record. However, 16% of respondents opposed pharmacist access, citing concerns related to privacy and data security.

During the focus group discussion, participants emphasized that myHealth has the potential to act as a bridge between primary and secondary healthcare. By granting pharmacists access to the platform, communication between general practitioners, specialists, and pharmacists could improve, leading to better medication reconciliation and adherence monitoring. Expanded services, such as telepharmacy, were highlighted in the open-ended responses as a way to enhance medication adherence and provide pharmaceutical care to

patients in remote areas. Additionally, respondents suggested developing a user-friendly interface for older persons to increase accessibility.

Conclusion: Healthcare professionals and patients support the evolution of myHealth to include pharmacist participation. Integrating pharmacists into the platform would allow for more comprehensive medication therapy management, better communication between healthcare providers, and increased patient safety. Potential expansions include telepharmacy and medication therapy management, addressing gaps in healthcare accessibility and ensuring pharmacists can contribute more effectively to patient care. Strengthening myHealth's role as a link between primary and secondary healthcare could lead to improved patient outcomes and a more coordinated healthcare system.

Pharmacist contribution in rare diseases

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Introduction: Pharmacists are integral members of healthcare teams, focusing on medication management, therapeutic optimization, pharmacoeconomics, and treatment accessibility. Addressing the complex medication needs of rare disease patients requires pharmacists to engage in multiple aspects of the medication use process. This study aimed to describe the current state of rare disease patient management and access to orphan medications, identify support services provided by patient support groups, and propose a framework for pharmacist-led contributions in rare disease patient care.

Method: A mixed-methods approach was employed, consisting of three phases: (1) Semi-structured interviews with ten key stakeholders, including two health service policymakers, six pharmacists, and two healthcare professionals, to assess current state of rare disease management; (2) Interviews with four patient support groups to explore service provision and pharmacist involvement; and (3) Development and validation of a framework for pharmacist-led contributions based on findings from phases 1 and 2. Thematic analysis was applied to identify recurring themes and key challenges.

Results: Findings highlight several systemic challenges in rare disease management, including limited local expertise, difficulties in medication procurement due to the country's small market size, and complex stakeholder coordination. Pharmacists play crucial roles in medication dispensing, procurement support, and patient counseling; however, they face barriers such as limited specialized training and resource constraints. The study also reveals a fragmented healthcare system, where multiple entities involved in pharmacy practice contribute to communication barriers and inefficiencies. Patient support groups reported limited awareness of rare conditions among community pharmacists and emphasized the need for enhanced education and interdisciplinary collaboration.

Conclusion: This study contributes to the understanding of pharmacists contributions to rare disease management by identifying challenges and opportunities for improvement. Recommendations include enhancing pharmacist involvement in multidisciplinary care, streamlining the Exceptional Medicinal Treatment (EMT) approval process, and engaging in EU joint procurement initiatives to improve access to orphan medications. Additionally, the development of a rare disease training program for pharmacists and other healthcare professionals, along with the establishment of a unified electronic health record system, is proposed. Implementing these strategies can significantly enhance rare disease patient care and improve treatment accessibility.

Risks and opportunities of digitalisation in pharmaceutical ecosystems: A SWOT analysis approach

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Introduction: The pharmaceutical industry is undergoing rapid digital transformation, integrating artificial intelligence (AI), robotisation, and electronic prescribing systems to enhance efficiency, reduce errors, and improve patient care. The COVID-19 pandemic accelerated this transition, highlighting the benefits of remote patient monitoring, automatation processes and digital health. Digital introduction possesses challenges such as cybersecurity threats, financial pressure and issues related to system suitability and acceptance. Current research primarily focuses on the benefits of digitalisation, with limited exploration of mitigation strategies for its risks. The study aimed to identify risks and opportunities of digitalisation in different pharmaceutical ecosystems.

Method: A strengths, weaknesses, opportunities, and threats (SWOT) analysis was conducted through interviews with 30 stakeholders from different sectors: community pharmacy, hospital pharmacy, pharmaceutical industry, pharmaceutical regulatory sciences, and medical practice. Interview responses were analysed and risks identified were presented to a focus group comprising of six stakeholders, one from each field involved in the SWOT analysis. Each stakeholder rated 15 identified threats on a 5×5 risk matrix based on probability and severity, where scores ranging from 1 to 5 were given. Risk Priority Numbers (RPNs) were calculated to

rank and prioritise risks, and mitigation strategies were then put forward.

Results: Key strengths identified included improved communication, enhanced efficiency, error reduction and environmental benefits through digital systems. Community pharmacists highlighted the advantages of e-prescribing and patient communication platforms. Clinical pharmacists and physicians emphasized the potential of AI in diagnostics and treatment optimisation. Regulatory officers and pharmaceutical industry personnel recognized digitalisation as a driver for streamlined workflows and enhanced data traceability. Challenges that were identified include cybersecurity threats, investment costs and loss of patient interaction. Staff training burdens, data losses and system failures due to connectivity or power disruptions were also identified as major threats. Legal and ethical concerns regarding patient privacy and security were highlighted. Opportunities included AI-driven softwares for different pharmaceutical sectors and automated dispensing. The integration of a centralised healthcare system with a common interface for electronic prescriptions and interprofessional communication were also mentioned. Participants agreed that, if strategically implemented, digitalisation could significantly improve patient outcomes and workplace efficiency.

Conclusion: Digitalisation presents strengths and challenges in pharmaceutical ecosystems. While enhancing efficiency and accuracy, issues such as cybersecurity risks, high costs and workforce adaptation require interventions.

Employment trends and determinants of career choices among Japanese pharmacy students

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Introduction: In Japan, where the declining birthrate and aging population are progressing, there are concerns that the number of pharmacists will exceed demand in 20 years. However, the country is currently facing issues such as the uneven distribution of pharmacists and a shortage of hospital pharmacists. Therefore, we conducted a survey on employment among fourth- to sixth-year pharmacy students to explore their preferred career choices and the factors influencing their decisions.

Method: In January 2025, the deans of 75 pharmacy schools in Japan were requested to inform fourth- to sixth-year students about participating in a survey. The survey was conducted using MS Forms, and responses were collected until March 4, 2025. This study was conducted with the approval of the Teikyo University Medical Ethics Committee and was supported by Health Labour Sciences Research Grant Number 24IA1001.

Results: Responses were obtained from 3,182 pharmacy students from 73 schools (1,201 fourth-year students, 1,298 fifth-year students, and 683 sixth-year students). The respondents included 938 males, 2,176 females, and 68 whose gender was unspecified. One-third of the responding students had received scholarships. A total of 921 students had already secured employment. The breakdown was as follows: pharmacies (37.5%), hospitals (23.6%), drugstores (20.8%), pharmaceutical companies (9.4%), government or public health institutions (2.6%), and CROs (1.3%). Additionally, 3.0% of students planned to pursue graduate studies. The top factor in determining employment choice was job content and fulfillment (27.3%), followed by salary level (15.1%), expected work location (11.0%), and employee benefits (10.6%). Among the 2,261 students who were either job hunting or had not yet started, the most desired employment sector was hospitals (39.5%), followed by pharmacies (24.1%), pharmaceutical companies (14.4%), drugstores (10.4%), government agencies (5.4%), and graduate school (3.1%). Among those who do not wish to work at a hospital immediately after graduation, the top reason was salary level (48.2%), followed by the nature of the work and its sense of fulfillment (14.0%), night shifts (10.9%), and the length or flexibility of working hours (7.0%).

Conclusion: The survey results indicate that Japanese pharmacy students choose their employment based on factors such as the nature of the work, sense of fulfillment, salary level, work location, and employee benefits. It was also suggested that salary disparities are one of the causes of the shortage of hospital pharmacists. These findings are expected to contribute to addressing the uneven distribution of pharmacists.

Optimization of hospital antimicrobial stewardship driven by digital intelligence technology: A practical study based on a 2200-bed tertiary hospital

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Introduction: Antimicrobial resistance has emerged as a critical global public health challenge, with irrational antimicrobial use being a key driver of its exacerbation. Therefore, healthcare institutions urgently require the implementation of Antimicrobial Stewardship (AMS). Traditional AMS primarily rely on manual operations, resulting in inefficiency and limited coverage. In recent years, the rapid development of digital intelligence technologies (encompassing artificial intelligence and big data analytics) has introduced innovative solutions for AMS. This study aimed to investigate the application efficacy of digital intelligence technologies in hospital antimicrobial management and provide practical references for the digital transformation of AMS in healthcare institutions.

Method: We selected a Chinese public tertiary hospital with 2,200 beds as the research subject and established a series of intelligent antimicrobial management systems using information technology. Specific systems included: a perioperative individualized antimicrobial intelligent recommendation system, a cognitive computing-based antimicrobial prescription review and alert system, a specialized archival management system for restricted antimicrobials (e.g., carbapenems and tigecycline), and an artificial intelligence-powered closed-loop prescription evaluation system. These systems were then deeply integrated into traditional antimicrobial management workflows to achieve an organic fusion of digital intelligence technologies and conventional management, thereby advancing the intelligent upgrading of antimicrobial management. Key indicator data such as antimicrobial use density (AUD), antimicrobial use rate (AUR), antimicrobial expenditure, and carbapenem-resistant gram-negative bacteria isolation rates before and after the introduction of digital intelligence technology (with January 2020 as the boundary, from January 2018 to December 2019 as the pre-intervention stage, and from January 2021 to December 2022 as the post-intervention stage) were comprehensively collected and comparatively analyzed.

Results: After the implementation of digital intelligence technologies, the total antimicrobial consumption (measured in defined daily doses, DDDs) for inpatients decreased from 377,657.93 in 2019 to 303,651.53 in 2022. AUD, expressed as defined daily doses per 100 patients per day (DDDs/100PD), declined from 43.58 to 35.04 (P< 0.001). AUR of inpatient (AURI) decreased from 44.71% to 44.67% (P = 0.470). The proportion of inpatient antimicrobial expenditure to medication expenditure (AE/ME) dropped from 16.41% to 14.96% (P< 0.001), while AE per-patient decreased from $245.14 to $183.11 (P< 0.001). AUR of outpatient (AURO) plummeted from 14.38% to 3.43% (P< 0.001), significantly below China's national standard of 20%. The proportion of antimicrobial cost to prescription cost in outpatient (ACO/PCO) decreased from 2.82% to 2.25% (P< 0.001). AUR of emergency patient (AURE) declined from 45.69% to 19.89% (P< 0.001), meeting the national requirement of <40%, with the proportion of antimicrobial cost to prescription cost in emergency (ACE/PCE) decreasing from 12.54% to 12.06% (P= 0.030). Regarding resistance control, the isolation rate of carbapenem-resistant Acinetobacter baumannii decreased from 10.78% to 7.82%, carbapenem-resistant Pseudomonas aeruginosa from 6.14% to 4.58%, and carbapenem-resistant Enterobacteriaceae from 9.90% to 6.87%.

Conclusion: This study provided practical evidence for the global digital transformation of AMS, fully demonstrating the immense potential of digital intelligence technologies in optimizing antimicrobial management. This study offered valuable insights for other institutions exploring scientific antimicrobial stewardship and contributed to enhancing global healthcare quality and public health security.

Empowering healthcare professionals in anti-doping: A train-the-trainer approach

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Introduction: The critical role of healthcare professionals has been increasingly recognised in safeguarding athletes from inadvertently using prohibited substances. This study described the development process of a "train the trainers" programme, specifically designed for healthcare professionals and assessed its effects on participants' knowledge and confidence.

Methods: The framework of the programme involved forming a task force, consulting advisory experts, recruiting instructors, selecting ten essential anti-doping topics, delivering comprehensive hands-on sessions with two small interest group discussion sessions, and feedback assessment.

A 20-question survey was validated (Cronbach's alpha = 0.926) and measured changes in knowledge, confidence, and satisfaction. Among 348 total registrants, 300 completed the programme, and 166 responded (55%).

Results: Overall satisfaction was high, with significant improvements in knowledge (59%, p<0.000) and confidence (52.3%, p<0.000). However, some participants were dissatisfied with the hybrid format and limited guidance of career development after training. Pharmacists represented the largest group (25.3%).

Conclusions: The programme effectively bolstered anti-doping competencies among healthcare professionals, laying a foundation to cultivate informed providers capable of guiding athletes. This "train the trainers" approach may serve as a blueprint for similar educational efforts, thereby highlighting the importance of prevention, education, and comprehensive doping control initiatives in effectively preserving sports integrity worldwide.

The pharmaceutical workforce in the Brazilian Public Health System trends: Growth in primary health care in the last decade (2014-2023)

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Background: On the global pharmaceutical workforce map, Brazil's total rate of 11.04 per 10,000 inhabitants is large and the largest among South American countries. In the Public Health System (SUS), pharmacists play a leading role in management, dispensing and, more recently, in clinical services. Pharmacists were one of the fastest-growing categories in SUS primary care services between 2008 and 2013. There is a lack of knowledge in the country about the real present and future needs of health care professionals. For pharmacists, it is necessary to recognise the trend in the national panorama of hiring and distribution of the workforce in the SUS in order to plan investments in regulation, training and public policies that meet the demands of the health system and value professionals.

Aim: To analyse the dynamics of the pharmaceutical workforce in the SUS over the last 10 years, starting in 2013, a period in which there has been rapid growth.

Methods: Descriptive-analytical, retrospective study. The data was obtained from the ElastiCNES2 platform, the official SUS database. Records from December 2014 to December 2023 were considered. Pharmaceutical rates per 100,000 inhabitants were calculated using the estimated population in each state of the federation for 2014 and 2023, sourced from the IBGE3. The data was analysed using descriptive statistics in the Epi Info software.

Results: The total pharmaceutical workforce in services serving the SUS in Brazil grew by 36% between 2014 and 2023 (72,867 pharmacists in 2023), and in PHC services by 47% (14,551 pharmacists in 2023). There has been a lower percentage of growth in PHC over the last ten years, if compared to the records between 2008 and 2013. Eight per cent of pharmacists (5,800 pharmacists) are formally linked to some kind of team, mainly in PHC. The types of professional relationship that have grown the most in the last ten years are those characterised as 'unprotected', such as scholarships and internships, or other types of employment that do not guarantee labour rights. The highest population rates are in the southern states (49.2/100,000 inhabitants), and the lowest in the northeast and centre-west (32/100,000 inhabitants).

Conclusion: The continuous growth reflects the consolidation process of the National Pharmaceutical Policy (PNAF), which provides for the supply of free medicines aligned with the supply of pharmaceutical services and pharmaceutical management. Although growth has been recorded, there has been a slowdown in the growth of the pharmaceutical workforce in primary care and the great differences between states and regions highlight the major challenges facing the sector. The significant increase in the number of unprotected contracts for workers is a sign of the precarious nature of work in the system. The results warn of the need for ongoing work by professional bodies and social control to defend the pharmaceutical workforce in order to advance access to and proper use of medicines. Problems with filling in and updating the data platform used as a source of data in this study by health service managers may lead to inaccuracies in the results.

Crisis preparedness and management in pharmaceutical scenarios

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Introduction: Crisis preparedness and management in pharmaceutical scenarios is essential for maintaining quality, safety, and efficacy of medicines while minimizing risks to patients and public health. The purpose is to investigate crisis scenarios in pharmaceutical distribution and community pharmacy. The objectives are i) identification of crisis scenarios and crisis preparedness and management measures, ii) evaluation of National Competent Authority role, iii) development of crisis management plans.

Method: Crisis preparedness and management were evaluated by establishing two focus groups (Pharmaceutical Distribution-FGPD, Community Pharmacy-FGCP) and developing and validating two questionnaires (Pharmaceutical Distribution-QPD, Community Pharmacy-QCP). A 1-5 scale was used for rating probability and severity of crisis scenarios and Risk Priority Numbers (RPNs) were obtained by multiplying probability and severity ratings. Participants rated crisis measure effectiveness and feasibility from 1-5. Mean Ratings (MRs) were then determined for each measure. Crisis management strategies are developed based on focus groups and questionnaires.

Results: FGPD (N=4) and FGCP (N=6) analysis identified the following common themes: 1) lessons learnt from past crises, 2) potential crisis scenarios, 3) effectiveness and feasibility of crisis measures, 4) National Competent Authority role in crisis preparedness and management and inter-organisation collaboration in crisis scenarios. Cost, operational constraints, and crisis unpredictability were factors cited by participants as limiting the effectiveness and feasibility of crisis management and preparedness measures discussed.

QPD participants (N=10) rated these crisis scenarios as having the highest risk: 1) sudden regulatory changes (RPN=13.5), 2) trade restrictions (RPN=12.9), 3) sudden resignation of Responsible Person (RP) (RPN=11.8). Clear communication with regulatory authorities as a crisis measure against sudden regulatory change was rated as effective (MR=4.4) and feasible (MR=4.3). For supply chain disruptions due to trade restrictions, procurement of therapeutic alternative products was rated as the most effective crisis measure (MR=4.6) while collaboration with regulatory/health authorities/industry partners rated as most feasible (MR=4). Employment of deputy RP as a crisis measure against sudden resignation of RP was rated as effective (MR=4) and feasible (MR=4). QCP participants (N=36) rated these crisis scenarios as having the highest risk: 1) critical medicine shortage (RPN=15.6), 2) medication error (RPN=13.5), 3) prolonged power cut (RPN=12.8). Recommendation of alternative therapy as a crisis measure against critical medicine shortages was rated as effective (MR=4) and moderately feasible (MR=3.6). Recording of patient contact details as a crisis measure against medication error was rated as effective (MR=4.2) and moderately feasible (MR=3.4). Installing a generator as crisis measure against a prolonged power cut was rated as effective (MR=4.4) and moderately feasible (MR=3.1). Participants agreed that the National Competent Authority has an important role to play in the crisis response coordination (QPD: n=9; QCP: n=31) and providing guidance during crises (QPD: n=9; QCP: n=32).

Conclusion: Proactive measures and inter-entity collaboration are essential for effective crisis preparedness and management in pharmaceutical scenarios. The unpredictable nature of crises, financial and administrative burden can challenge the effectiveness and feasibility of crisis strategies.

Initiation of advocating food and drug safety through interdisciplinary social practice in a University Social Responsibility (USR) project

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Background Information: The Ministry of Education in Taiwan has actively promoted the utilization of academic resources, research, industrial collaboration, and community engagement through the implementation of University Social Responsibility (USR) projects. In alignment with this initiative, an interdisciplinary faculty team from a medical university—comprising experts in Western medicine, Chinese medicine, food, and nutrition—collaborated with various stakeholders, including students, community members, and key figures from industry-government alliances. Since 2023, this team has been implementing the "Food and Drug Safety (foodrxcmu)" project to contribute to several Sustainable Development Goals (SDGs).

Purpose: This presentation aims to report the first-year implementation and outcomes of the USR foodrxcmu project by evaluating its socio-economic return.

Methodology: The USR foodrxcmu project was designed, implemented, and assessed based on the Service-Teaching and Research (STAR) model, originally proposed by Dr. Galal in the United States. This project was developed to support the four key SDGs: SDG 2 (Zero Hunger), 3 (good health and welling), 4 (Quality Education) and 17 (building diverse partnerships). Led by a faculty member from the College of Pharmacy (as the Principal Investigator), the interdisciplinary team sought to bridge service-learning outcomes with interdisciplinary research and vice versa, thereby enhancing academic contributions. The project integrated coursework, extracurricular activities, talent development workshops, and faculty researches, leveraging both online (https://foodrxcmu.net/) and offline platforms (e.g., in classrooms and community settings) to promote public awareness and proactive engagements in food and drug safety advocacy. Specifically, participating students—including those from pharmacy and nutrition programs—engaged in learning-by-doing community service initiatives alongside faculty members, with all activities were transparently reported on https://foodrxcmu.net/News/ItemList. Additionally, they contributed to public education efforts by developing health education materials (such as posters and creative videos) under faculty supervision, which were then published online (https://foodrxcmu.net/News/KnowledgeList or https://foodrxcmu.net/Article/Video). To assess the project's outcomes, a mixed-methods Social Return on Investment (SROI) analysis was conducted. Data—including both quantitative and qualitative economic indicators—were collected from January to December 2023. The SROI ratio was

calculated by dividing the generated social value by the associated service provision costs, considering four key cost justification factors (i.e., deadweight, displacement, attribution, and drop-off).

Results: In 2023, this project engaged 13 full-time faculty members, 12 co-teaching professionals, 2 full-time research assistants, 25 part-time student assistants, 744 student participants (person-times). Beyond university engagement, the project also involved over 100 volunteers and community leaders, 2,000 older adults and children in community outreach programs, 16,000 person-times visiting the online platform. Ultimately, the project achieved an SROI return of 1:2.96, indicating that the USR foodrxcmu project effectively addressed key determinants of health and well-being through its interventions.

Conclusion: The results indicate that for every 1New Taiwan Dollar (NTD) invested in this project, the return for society was NTD$ 2.96. In addition to leveraging their core competencies to collaboratively promote food and drug safety, project members and stakeholders also contributed to achieving the designated 4 Sustainable Development Goals (SDGs) (2, 3, 4, 17) as well.

Integrating sustainable development goals into pharmacy education: A pilot international learning network camp

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Background information: The Sustainable Development Goals (SDGs) provide a global framework for addressing health, environmental, and social challenges. Pharmacy students, as future healthcare professionals, play a vital role in promoting health, well-being, and responsible resource management. Integrating SDGs into pharmacy education is essential for preparing students to tackle global healthcare challenges.

Objective: This study presents the development and outcomes of the first Sustainable Development Goals and International Pharmaceutical Learning Network (SDGs&iPLN) program, an international initiative designed to integrate SDGs into pharmacy learning and practice for pharmacy students form multiple countries.

Methods: The College of Pharmacy, with support from the university administration and Ministry of Education, launched the SDGs&iPLN program in collaboration with University Social Responsibility (USR) faculty and hospital staff. This two-week fully English-speaking program hosted 26 international students from the U.S., Vietnam, and Thailand, along with 15 local pharmacy students as teaching assistants and cultural ambassadors. Over 20 faculty members and practitioners involved. The curriculum integrated SDGs with pharmacy education, research, and patient-centered care through: (1) Seminars on global pharmacy practice, Taiwan's National Health Insurance (NHI), nanotechnology, Traditional Chinese Medicine (TCM), and social pharmacy research (including the next evolution in pharmacy practice of Pharmacy 5.0) (2) Site visits and shadowing at a Cancer Research Center, hospital pharmacies, Taiwan FDA (TFDA), Center for Drug Evaluation (CDE), pharmaceutical manufacturers, and community pharmacies. (3) Workshops on TCM ointment making, herbal mosquito repellent crafting, and SDG-driven pharmacy solutions. (4) Cultural immersion, including night markets, museums, and scenic attractions. Despite a typhoon disrupting the schedule, community outreach activities were adapted into interactive English-based sessions, where international students became learners and local students served as facilitators, mirroring Taiwan's USR-based community health education model. A key highlight was TFDA and CDE visits, where students explored pharmaceutical safety regulations, NHI reimbursement policies, and Health Technology Assessment (HTA) strategies. Pre- and post-program online surveys assessed students' baseline knowledge, clinical understanding, and program effectiveness. Participant reflections were collected.

Results: A pre-program SDG quiz showed an average score of 2.9/5 (58%), indicating room for growth. Post-program surveys (1-5 scale) showed all students rated their experience above 3, with over 50% giving a perfect score of 5. 100% of participants recommended the program. Student reflections highlighted key takeaways: A U.S. student valued cross-cultural learning, stating, "It expanded my knowledge of global pharmacy and motivated me to apply this perspective to my studies and career." Another participant appreciated the focus on TCM and international collaboration. One student enjoyed Taiwanese culture, social pharmacy discussions, and environmental protection efforts. Another highlighted the program's emphasis on SDGs and Pharmacy 5.0, which provided insights into global healthcare challenges and international collaboration.

Conclusion: The SDGs&iPLN program significantly enhanced students' global healthcare perspectives and pharmacy education through experiential learning. By bringing together students from four countries and seven pharmacy programs in universities, it fostered cross-national collaboration and professional networks. Ultimately, the program empowered pharmacy students to become globally aware, future-ready pharmacy professionals, prepared to address emerging challenges of SDGs in pharmaceutical sciences and healthcare innovation.

Exploring pharmacy students' awareness, attitudes, and preparedness toward deprescribing initiatives

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Background information: Deprescribing remains an underexplored concept in Taiwan and many other countries, with limited educational content available for pharmacy students. As future pharmacists, understanding deprescribing initiatives is essential for contributing to a sustainable healthcare system and supporting the United Nations' Sustainable Development Goals (SDGs).

Objective: This study assesses pharmacy students' awareness, attitudes, and preparedness toward deprescribing, identifying key factors influencing their understanding and willingness to engage in deprescribing initiates and practices. Findings aim to highlight educational gaps and strategies for integrating deprescribing principles into pharmacy curricula.

Methodology: The study first evaluated three 5th-year (in their 6-year Pharm.D. program) pharmacy students' awareness and ideas for deprescribing campaigns. Then, a focus group discussion was conducted using a semi-structured interview guide to explore students' perceptions of deprescribing and its link to relevant SDGs. Participants included students from different countries and academic levels to ensure diverse perspectives. Questions were provided in advance, and students used anonymous identifiers during the discussion. A faculty expert in deprescribing and SDG research moderated the discussion. Atlas.ti 7 software was used for thematic analysis, with coding performed by two independent researchers.

Results: Eight students participated in the focus group, where three were international students (from Hong Kong and Malaysia), and one was male. They represented four different pharmacy programs across five academic years, with varying pharmacy shadowing experiences. The key findings include: (1) Most students were unfamiliar with deprescribing, particularly in older adult medication management. (2) Challenges included effective communication with physicians and justifying deprescribing decisions based on patient lifestyles and chronic disease management. (3) While students recognized pharmacists' roles in deprescribing, they noted a lack of structured education and training in pharmacy curricula. (4) Undergraduate students lacked real-world deprescribing exposure, except for a master's student with pharmacy practice experience. (5) Educational differences between Taiwan, Hong Kong, and Malaysia highlighted significant training gaps in deprescribing. (6) Students emphasized the need for improved pharmacist-patient communication training and structured deprescribing education. (7) Interest was expressed in interdisciplinary courses, extracurricular activities, and international initiatives to enhance engagement with deprescribing and relevant SDGs. Future recommendations include: (1) Collaboration among government authorities, academic institutions, student organizations, and pharmacy associations to develop system-wide deprescribing solutions, aligning with SDG 17 (Partnerships for the Goals). (2) Students expressed interest in advocacy, education, and research initiatives to contribute to deprescribing in clinical practice, policy-making, and professional development.

Conclusion: This study highlights significant gaps in deprescribing education and training among pharmacy students in Taiwan and neighboring regions. While students recognize deprescribing's role in medication optimization and patient safety, they feel unprepared to engage in deprescribing initiatives. Integrating deprescribing education into pharmacy curricula, clinical training, and interdisciplinary collaborations is essential to equip future pharmacists with necessary skills and knowledge. Policy support and global cooperation are crucial to expanding deprescribing awareness, ultimately contributing to a more sustainable healthcare system and the fulfillment of relevant SDGs (SDG3, 4, and 17 [Partnerships for the Goals]or so).

Integrating clinical pharmacy teams into primary care provider (PCP): Improving workflow efficiency, reducing multitasking, and improving provider well-being

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Background: Integrating Clinical pharmacy teams into primary care provider (PCP) workflows, can enhance healthcare efficiency, promote multidisciplinary cooperation, and improve patient outcomes. Although the existing literature emphasizes the advantages of pharmacist-led medication management treatments, there is limited information on their potential to reduce provider burnout and burden.

Purpose: This study examines how clinical pharmacy team integration affects patient care, workflow efficiency, and provider well-being in primary care settings. The primary areas of evaluation are provider satisfaction, physical and emotional strain, communication efficacy, and multitasking demands.

Methods: Pharmacist embedded within the UCI Senior Health center PCP, which specialize in the geriatric population, coordinating comprehensive medication management (CMM), gathering medication history, developing patient-centered assessments and plans using electronic health records, providing optimal care through refill and referral

processes, patient education, and speeding up drug availability while lowering costs by handling prior authorizations. After gathering informed consent, self-report survey including the 5-point Likert scale was conducted among three physicians and one physician assistant at the UCI Senior Health Center to assess their experiences with the integrated pharmacy model. A central tendency and frequency distribution were analyzed. The burnout assessment tool assisted in measuring the provider's well-being, workload perception, communication efficacy, resource sufficiency and collaboration frequency. Furthermore, responses related to multitasking and working hours were analyzed in relation to the burnout levels.

Results: Survey respondents highly valued the contributions of clinical pharmacy teams, particularly in medication management and patient communication. Due to the demands of patient care, Most respondents rated communication between pharmacy teams and other healthcare providers as very or extremely effective. In order to maximize patient care, an abundance of professionals collaborated often with pharmacy staff. However, multitasking is still common; with a significant portion of respondents often engaging in simultaneous tasks, potentially impacting productivity. While one comment was indifferent, many respondents reported a reasonable workload and sufficient resources. Notably, there may be a link between multitasking or longer workdays and higher levels of burnout.

Conclusion: Clinical pharmacists play an important role in primary care by enhancing patient outcomes, minimizing multitasking stress, and optimizing pharmacotherapy. The findings stress the need for resource allocation to minimize the attention distraction and structured integration techniques to assure long-term benefits while also considering provider well-being. Given the small sample size, further evaluation is necessary to interpret the results comprehensively.

Gender-based violence and harassment: the context of women pharmacists in Brazil. Preliminary study

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Background: In the pharmacists, the female majority is observed in Brazil, emphasizing the need to discuss violence against women, as the health sector records some of the highest levels of violence in the workplace compared to other sectors.

Purpose: To describe the frequency and profile of incidents of violence involving women pharmacists in the workplace.

Methods: Cross-sectional study based on the responses of women pharmacists working in all regions of Brazil to a survey, applied from October 2023 to May 2024, with the support and dissemination of the Federal Council of Pharmacy (CFF). Issues related to the profile of incidents of workplace violence and harassment involving Brazilian women pharmacists and the profile of professionals were explored. Factors associated with the occurrence of incidents of violence were evaluated through univariate and multivariate analyses using Pearson's chi-square test, considering a significance level of 95.0%.

Results: A total of 1,496 pharmacists responded to the survey. A considerable proportion of women pharmacists (n=459; 30.7%) reported having been exposed to the threat of violence or violence. In addition, 24.3% (n=364) reported having been exposed to unwanted sexual attention. It was observed that, through multivariate analysis, the following variables were independently positively associated with being exposed to the threat of violence/violence in the workplace: working in a private pharmacy/office (OR=2.70; 95%CI=1.28-5.70; p=0.009); working in a public pharmacy/APS/CAPS (OR=3.93; 95%CI=1.81-8.55; p=0.001); reasonable to very poor general health (OR=1.90; 95%CI=1.41-2.57; p<0.001); reasonable to very poor mental health (OR=1.37; 95%CI=1.04-1.80; p<0.023). The variable working professionally in the northeast region was negatively associated with exposure to the threat of violence/violence (OR=0.68; 95%CI=0.50-0.94; p=0.018). Regarding the dependent variable exposure to unwanted sexual attention in the workplace, there were independent positive associations with the following variables: having a lato sensu postgraduate degree/MBA (OR=1.72; 95%CI=1.27-2.33; p=0<001; having a master's degree (OR=2.51; 95%CI=1.64-3.85; p<001); working in a private pharmacy/office (OR=4.00; 95%CI=1.66-9.65; p=0.002), working in a public pharmacy (OR=2.60; 95%CI=1.04-6.51; p=0.042); and fair to very poor mental health status (OR=1.66; 95%CI=1.25-2.21; p<0.001). Working in the northeast region, however, was negatively associated (OR=0.58; 95%CI=0.41-0.83; p=0.003).

Conclusion: Violence against women pharmacists in the workplace has proven to be worryingly frequent in Brazil. Associated factors demonstrate possible prioritization strategies for addressing this major problem in the pharmaceutical professional context. We hope that this study will encourage action in the national context, not only in Brazil, as well as broaden the discussion on the problem in the international scenario.

Expanding the pharmacists' role in Brazil in the context of latent infection by Mycobacterium tuberculosis

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Background: Approximately 56 million people have been infected with Mycobacterium tuberculosis in the last two years worldwide, and are at increased risk of progression to active tuberculosis (TB). Thus, TB preventive treatment (TPT) has significantly contributed to controlling the TB epidemic in high-burden settings. In this sense, expanding the role of pharmacists in the field of latent Mycobacterium tuberculosis infection (LTBI), a professional strategically positioned in the health system, enhances the fight against TB in Brazil.

Purpose: Describe the process of expanding the role of pharmacists in Brazil within the scope of ILTB.

Methods: A descriptive study was carried out focusing on initiatives aimed at expanding the role of the pharmacist within the scope of ILTB from the perspective of the Federal Pharmacy Council (CFF).

Results: A letter was sent in June 2024 by the Health and Environmental Surveillance Secretariat of the Brazilian Ministry of Health to the CFF requesting a technical opinion on the possibility of including pharmacists in the list of professionals working in the prescription of TPT. The CFF responded positively to this possibility, based on resolutions no. 713/2021 and 568/2012, which regulate professional practice in pre-hospital care services, in hospital pharmacy and in other health services, whether public or private. Additionally, the CFF highlighted the pharmaceutical role in making requests. and evaluating clinical and laboratory tests as an instrument for Individualizing pharmacotherapy is crucial for establishing TPT. In response to the CFF's letter, an Information Note from the Ministry of Health was published with technical recommendations for pharmacists to welcome, guide and prescribe TPT within the public health system, officially including the professional as an instrument for expanding access to prophylaxis.

Conclusion: We hope that this national agreement be implemented in real-world actions that expand the role of pharmacists in combating TB in the Brazilian context. Furthermore, it is expected that such an initiative will inspire other countries to implement legal frameworks that enhance pharmaceutical engagement in eliminating TB.

Strategies implemented by the Federal Pharmacy Council to promote equity, inclusion, and diversity for the LGBTQIAPN+ and other vulnerabilized populations

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Background: The Working Group on Pharmaceutical Care for the LGBTQIAPN+ Population and Other Vulnerable Groups was established in 2022 with the aim of promoting equity, inclusion, and respect for diversity through educational actions and policies within the field of pharmacy. Purpose: To describe the actions and strategies adopted by the Working Group on Pharmaceutical Care for the LGBTQIAPN+ Population and Other Vulnerable Groups to promote equity in the pharmaceutical field.

Methods: This is a descriptive study of professional experience, reporting on the activities and actions developed by the Working Group on Pharmaceutical Care for the LGBTQIAPN+ Population and Other Vulnerable Groups since its creation in 2022.

Results: Since its establishment in 2022, the Working Group on Pharmaceutical Care for the LGBTQIAPN+ and Other Vulnerabilized Populations has focused on developing educational, technical and policy strategies based on the principle of health equity. Through collaborations with the Ministry of Health, it was possible to effectively implement the pharmaceutical prescription for PrEP and PEP and Tuberculosis Preventive Therapy within the Brazilian Unified Health System, with the aim to reduce the incidence of HIV and TB infections, which often affect vulnerabilized populations. Additionally, documents such as the Pharmacist's Guide on PrEP and PEP were developed to assist pharmacists in HIV prevention care and services. All members of the working group actively participated in scientific events such as congresses, workshops, and training courses as speakers, aiming to educate and raise awareness among pharmacists about the topics advocated by the group. Within

the Council System, the use of the social name for transgender and travesti pharmacists was implemented, along with ongoing initiatives to regulate the role of the pharmacist in care aimed at the LGBTQIAPN+ population.

Conclusion: The activities of the Working Group on Pharmaceutical Care for the LGBTQIAPN+ and Other Vulnerabilized Populations represent a significant advancement for the profession, as pharmacies are socially inclusive healthcare establishments and are key access points for vulnerable populations. Furthermore, fostering these initiatives contributes to awareness-raising and the promotion of health equity for these groups.

Construction of teaching materials for a nationwide course on asthma for pharmacists in Brazil

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Introduction: In Brazil, more than 350,000 pharmacists work in the country and there is no national course on chronic respiratory diseases for pharmacists. Therefore, to meet this need and the FIP Call for action in this area, the Federal Pharmacy Council established a group of experts in the field of education and care for people with asthma.

Aim: To describe the development of teaching materials for the a nationwide course to qualify Brazilian pharmacists in order to provide pharmaceutical screening services and health education in asthma, in primary health care.

Methods: This is a descriptive study about the development of teaching materials for the of a course brought by the Federal Council of Pharmacy of Brazil (CFF). The group of experts used the Trahenten® learning design methodology developed by Flora Alves in her Book. Documental analysis was used, of digital and physical documents produced during the development of the course.

Results: Stage I - After five meetings, the pedagogical project of the course was detailed and structured with 3 parts: I) distance learning and self-instruction, available in the CFF platform, with content aligned with the FIP guidelines (40h); II) face-to-face step, focused on the development of skills and attitudes for asthma care and use of inhaler devices (15h); III) in-service practice, with care provision to people with respiratory symptoms (5h). Pedagogical materials will also be developed.

Stage II - To standardize the application of practical activities, the working group developed a facilitator's manual. Through meetings with the educators who will apply the method, the material was evaluated and proposals for improvement were incorporated.

Stage III - For activities aimed at health education, 13 educational videos and 12 printed educational materials on asthma and inhaler devices were produced. Stage IV - A textbook is still under development and will be used as the base text for the course.

Conclusion: It is expected that the pedagogical materials produced will contribute to achieving the planned learning objectives. It is expected that the course provides the qualification of pharmacists to provide screening services and health education in asthma and encourages this practice.

Pharmacist-led prediabetes screening and education in New Orleans hospitality workers

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Background: Hospitality workers in New Orleans often lack access to preventive healthcare, placing them at greater risk for developing chronic diseases like type 2 diabetes. Irregular work hours, demanding labor, limited wages and limited insurance coverage are all factors that contribute to poor health outcomes in this population. Early identification of prediabetes and targeted health education are critical interventions to address this disparity and to reduce the overall burden of disease. Purpose: This project explores prediabetes prevalence, and the impact of a pharmacist led, workplace-based, multi-faceted intervention to improve health outcomes among hospitality workers in New Orleans, Louisiana, USA.

Objectives:
1.Assess local prediabetes prevalence using the American Diabetes Association (ADA) Prediabetes Risk Assessment Tool and A1C testing.
2.Evaluate changes in knowledge of prediabetes following pharmacist-led health education.

Methods: Through this pilot study, pharmacy faculty and student interns delivered workplace interventions at multiple hospitality industry sites in New Orleans, such as hotels, bars and restaurants. Roughly 300 participants were surveyed and screened for risk of prediabetes. Participants completed the ADA risk assessment tool and received point-of-care hemoglobin A1C testing. At risk participants engaged in education on nutrition, physical activity and the benefits of a

lifestyle change program to prevent diabetes. Pre- and post-intervention surveys assessed participants' knowledge.

Results (preliminary): Initial screening data indicate a greater prediabetes prevalence among participants as compared to the United States national prediabetes average, with an initial risk rate 5% above the national average of 33%. While data collection is ongoing via pre and post surveys, the authors hypothesize that pharmacist delivered education will improve participants' overall knowledge score by 30% or greater. Pending results will be compiled and prepared for conference presentation.

Conclusion: The combination of workplace-based risk screenings and pharmacist-led education is an impactful strategy for identifying and empowering at-risk individuals. This approach highlights the pharmacist's role in disease prevention and public health outreach, particularly among underserved workforce populations. Future work may explore integrating long-term follow-up and employer-supported wellness initiatives.

Workplace wellness reimagined: Pharmacist-facilitated tools and care linkage for diabetes prevention

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Background: Although individuals may be aware of health risks, sustained behavioral change often requires access to tools and supportive healthcare resources. Hospitality workers face barriers such as irregular work hours, limited healthcare access and financial limitations that impede follow-through on preventive care. This project evaluated the effectiveness of pharmacist-facilitated delivery of practical health tools and resource referrals to support lifestyle change for diabetes prevention. Purpose: This project explores the impact of a pharmacist led, workplace-based, multi-faceted intervention to improve health outcomes among hospitality workers in New Orleans, Louisiana, USA.

Objective: Investigate the effectiveness of providing health-promoting tools and connections to healthcare resources in driving behavior change among at-risk hospitality workers.

Methods: Pharmacy faculty and student interns delivered interventions at multiple hospitality industry sites in New Orleans, such as hotels, bars and restaurants. Following hemoglobin A1c testing, a written diabetes risk assessment and pharmacist-led education, 300 participants received prevention toolkits including a fitness tracker and a durable portion plate. Pharmacists and interns also facilitated referrals to community diabetes prevention programs and local primary care providers. Prior to these interventions, participants' intent to change was measured via survey. Aspects of the Health Belief Model of Behavioral Change were measured as well. Participants were followed at 1 month and 3 months to assess resource utilization and self-reported health behavior changes through structured surveys.

Results (preliminary): The authors hypothesize that at least 25% of participants will access the referral programs recommended as part of the intervention, including the diabetes prevention programs and primary care facilities when needed. The authors also hypothesize that at least 50% of participants will utilize at least one of the healthy lifestyle tools provided, such as the fitness tracker or healthy portion plate. While data collection is ongoing, the pending results will be compiled and prepared for conference presentation.

Conclusion: Distributing practical health tools and providing direct links to care may significantly improve participants' ability and motivation to engage in preventive behaviors. Pharmacists can play a critical role in educating and equipping underserved populations to act on the health knowledge they have. This scalable model supports public health equity and the expanded role of pharmacists in community-based preventive care.

Exploring the ideal delivery of a patient-reported experience measure for medications in primary care in Ontario, Canada: A survey study

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Introduction: Prescription medications are one of the most widely used health interventions. In Canada, they account for a major health expenditure, with over half of Canadian adults using at least one prescribed medication in the past month. Despite the widespread use, experiences with medications are not routinely assessed using standardised tools. This raises concerns for safe, effective, and quality care among those who take prescription medications. To provide patient-centred care, understanding and integrating patients' perspectives is essential. Standardised measures, such as a

patient-reported experience measure (PREM) for medications, would support the collection of patient experiences to enhance communication, identify unmet needs, inform shared decision-making, and improve the overall quality and safety of medication use.

Purpose: The objective of this study was to examine the barriers and facilitators to the use of a PREM for medications in routine practice in Ontario, Canada.

Methods: This cross-sectional survey study was the second phase of a three-phase exploratory sequential mixed methods study. Informed by the behavioural domains outlined in the Theoretical Domains Framework, a survey was created based on a literature review, qualitative interviews, and ongoing consultation with an advisory committee. The advisory committee was comprised of five persons with lived experience of taking medication. Participants included persons with lived experience, medication prescribers (physicians, pharmacists, nurses), and health system decision-makers. The survey was self-administered and electronic. A 5-point Likert-type scale was used for most responses. The survey collected demographic information, barriers and facilitators to the use and implementation of a PREM for medications, and the ideal delivery of a future measure. Data were analysed descriptively in R.

Results: 397 participants completed the survey, including 200 medication prescribers and decision-makers and 197 persons with lived experience. Participants identified the following domains from the Theoretical Domains Framework as barriers to implementing and using a PREM for medications: Knowledge, Reinforcement, and Environmental Context and Resources. The Theoretical Domains Framework domains that participants identified as facilitators to implementing and using a PREM for medications were Skills, Beliefs about Capabilities, Optimism, Goals, and Social Influences. Regarding the ideal delivery of a future PREM for medications, all participant groups agreed that it should take under 10 minutes to complete. They also agreed that the PREM should consist of open- and closed-ended questions. Persons with lived experience reported that they would prefer to complete a PREM for medications online, rather than on paper. The majority of persons with lived experienced preferred for a PREM for medications to be implemented in primary care, while the majority of prescribers and decision-makers preferred for the PREM for medications to be implemented in community pharmacy.

Conclusions: This study identified key barriers and facilitators to implementing a PREM for medications. Tailoring the development and delivery of a PREM for medications to the preferences of key interest groups is crucial to promoting patient-centred care and fostering better outcomes for those using medications. These insights from this study will support the development of a PREM for medications, along with program and policy interventions to enhance implementation and sustainability.

The policy process and legislative reform enabling pharmacy-led substitution of biological medicines in Finland

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Introduction: Biosimilars have been part of European pharmaceutical legislation since 2003. In the same year, Finland introduced generic substitution for small-molecule medicines, resulting in significant direct cost savings for patients and public budgets, especially when combined with the reference pricing system, implemented in Finland 2009. Biosimilars are clinically equivalent to their biologic originators. They are expected to mitigate rising medicine costs and yield savings in biologic therapies, which have significantly increased in recent years. Despite the Finnish Medicines Agency's announcement in 2015 that biological originators are interchangeable with their biosimilars, the uptake of biosimilars remained sluggish. Prescribers were reluctant to switch medications, necessitating new actions.

Purpose and method: The purpose of this study is to produce a descriptive analysis of the Finnish policy making process and legislation reform leading to pharmacy-led substitution of biologics and to describe how the reform is implemented.

Results: Information and regulatory guidance covering prescribing, dispensing, and reimbursements were employed to address escalating biological medicines expenditures and promote the use of biosimilars. In 2016, the Council for Choices in Health Care in Finland recommended including biosimilars in public healthcare services. The Rational Pharmacotherapy Action Plan (2018-2022) included biosimilar-related initiatives to enhance prescribers' awareness of pricing and provide information about biosimilars.

In 2018, the Finnish Medicines Agency conducted a prospective risk management study to identify the potential benefits and harms of pharmacy-led substitution. The Social Insurance Institution provided prescribing feedback for physicians in 2020. The Ministry of Social Affairs and Health appointed a working group to consider pharmacy-led substitution of biologics in 2022. Proposals to Parliament on biologics prescribing and pharmacy-led substitution were subjected to public consultation in the same year. The obligation to prescribe the lowest-priced biologic was shifted from decree to law, and the Social Insurance Institution was appointed as the supervising authority. Furthermore, biologics prescriptions were restricted to being valid for only one year instead of the standard two. The proposal for pharmacy-led substitution received critical feedback from

stakeholders. The revised proposal was approved in February 2023.

According to the legislation, pharmacy-led substitution of biologics was approved with a six-month interval instead of the standard three-month interval. The substitution includes all self-injectable subcutaneous biological medicines, except for short-acting insulins and therapies for patients under 18. Substitution was initiated with enoxaparin in 2024. In January 2025, it was expanded to include all other biologics, excluding insulins. In addition to glargine insulin, other long-acting insulins will be subjected to pharmacy-led substitution at the beginning of 2026.

The Ministry of Social Affairs and Health has convened a national multidisciplinary working group to coordinate the safe implementation of the new legislation. Continuing education supports implementation at the pharmacy level. In March 2025, self-injectable biosimilars of 14 active substances were available for outpatient care in Finland.

Conclusion: New legislation aims to enhance cost-effectiveness without compromising medication safety. In Finland, highly educated community pharmacists are integral to healthcare for every patient using subcutaneous biologics at home. Pharmacy professionals can ensure patient safety through proper medication counselling procedures and tools.

Strengthening equity in essential medicines selection: The case for inclusive citizen engagement

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Background: Developing a National Essential Medicines List (NEML) is a cornerstone of equitable healthcare, shaping access to life-saving treatments while managing budget constraints. The 1978 Alma-Ata Declaration emphasised the importance of community participation in health decision-making, yet current NEML processes often prioritise input from patient organisations and disease-specific advocacy groups. As the WHO Model List of Essential Medicines (EML) marks its 50th anniversary in 2027, it is timely to reassess whether citizen engagement mechanisms represent broader societal interests. Over-reliance on patient organisations risks prioritising well-represented conditions at the expense of others, potentially undermining equity. Broadening the engagement to include citizens without direct disease-related interests is critical to fostering a more balanced and fair medicines selection process.

Purpose: This study examines how public participation is framed in NEML decision-making. It explores whether a more inclusive engagement approach that incorporates citizens without vested disease-specific interests could enhance fairness and legitimacy. The hypothesis is that a more representative engagement process leads to better alignment with public health priorities, reducing the risk of disproportionate influence by well-resourced patient organisations.

Method: A qualitative discourse analysis was conducted using NVivo 14 to examine how different actors frame citizen engagement in NEML development. Data sources included: (1) Policy documents: National EML guidelines, WHO EML reports, government-issued health policy papers, and national pharmaceutical policy frameworks from selected countries. (2) stakeholder consultations: Public submissions, meeting minutes, and recommendations from NEML decision-making committees. (3) Advocacy and media discourse: Position papers from patient organisations, civil society statements, and news articles discussing NEML revisions. Thematic coding was applied to identify dominant narratives, power asymmetries, and the framing of public engagement in medicine selection. A comparative case study approach was used to analyse how countries structure citizen participation and whether broader engagement leads to more balanced medicine selection.

Results: Preliminary findings indicate that patient organizations often exert a strong influence on NEML decisions, steering priorities towards conditions with vocal advocacy rather than a balanced reflection of population health needs. In contrast, jurisdictions with formalized mechanisms for broader citizen involvement—such as public hearings and citizen juries—report enhanced public trust and more equitable prioritisation of medicines. The analysis revealed key themes, including the redefinition of "expertise" as a barrier to inclusive participation, the strategic deployment of equity rhetoric by various stakeholders, and the absence of robust institutional frameworks for engaging non-affiliated citizens.

Conclusion: Expanding citizen engagement beyond traditional patient representatives can significantly enhance the fairness and legitimacy of NEML decisions. Policymakers are encouraged to adopt structured deliberative models—such as citizen juries or public panels—to incorporate a broader spectrum of voices in the decision-making process. As the WHO EML nears its 50th anniversary, this study underscores the opportunity to align NEML design with the principles of the Alma-Ata Declaration, ultimately ensuring that essential medicines selection better reflects the diverse needs of society. Future research should refine participatory methodologies to balance inclusivity with technical expertise, ensuring that decision-making processes remain evidence-based and equitable.

Tracking stress, job satisfaction and compassion fatigue in early career Australian community pharmacists: A longitudinal study

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Introduction: Early Career Pharmacists (ECPs) experience higher levels of stress and burnout compared to their more experienced colleagues. Australian ECPs are those who have been registered to practice pharmacy for a period of no more than ten years. Many of these pharmacists began their careers at the height of the COVID-19 pandemic, experiencing heightened demands for immediate services, as well as many rapid changes to legislation and provisions. Peer support involves the sharing of emotional and wellbeing assistance between individuals with shared lived experiences, including within the same profession or job role. This wellbeing strategy has shown to benefit other healthcare professionals, but not yet ECPs.

Purpose: This study aims to investigate current baseline levels of stress, compassion fatigue and job satisfaction among Australian ECPs, as well as their awareness and attitudes toward peer support programmes.

Method: ECPs were recruited through social media platforms (Facebook and LinkedIn) and through professional and pharmacy banner groups. The advertisements provided a QR code to an anonymous Qualtrics survey. The survey collected demographic data, responses to validated questionnaires (Perceived Stress Scale (PSS-10), Job Satisfaction Scale (JSS), Professional Quality of Life Health Measure (ProQol Health)), and short-answer questions about peer support and stress management strategies. The survey was conducted at three time points: May-July 2023, November 2023-April 2024, and July-September 2024.

Results: A total of 730 responses were collected from the three surveys. The majority of participants worked in urban areas (75.2%) and at least 35 hours per week (66.3%). The ECPs consistently reported moderate stress levels, with data suggesting an inverse relationship between PSS-10 scores, age and experience level. While they expressed overall satisfaction with their collegial relationships and the nature of their work, they voiced dissatisfaction with their working conditions, including pay and contingent rewards. Pharmacists working in rural and remote areas consistently reported greater satisfaction with their rates of pay. They also reported feeling a higher degree of compassion satisfaction when compared to those working in urban or metropolitan environments. Younger ECPs expressed greater satisfaction in their relationships with supervisors across all three survey rounds. All ProQol Health sub-measures remained within average range across all three surveys. "Talking to others" was mentioned as the most popular coping strategy in response to stress, with colleagues being the preferred confidants, followed by friends and family. Although many ECPs were unfamiliar with formal peer support programmes, many were in favour of participating in a programme dedicated specifically to pharmacists.

Conclusions: Australian ECPs reported experiencing significant stress and ambivalent feelings about their jobs. Younger ECPs were more prone to experiencing burnout compared to their older colleagues, but reported feeling better supported at work. There is a strong interest in peer support programmes within this cohort, but further research is required to determine their feasibility and effectiveness.

Quality use of antipsychotics in people with dementia: a national data linkage study

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Introduction: Clinical quality indicators for antipsychotic use in dementia care have focused on rates or duration of use; however, other important quality use measures remain underexplored. This study aimed to investigate the prevalence and sociodemographic risk factors associated with quality use of antipsychotics in older people living with dementia in Australia.

Method: This was a retrospective cross-sectional study using national linked data from the 2021 Census and Pharmaceutical Benefits Scheme (PBS). All people with dementia aged 65 years and older who responded to the 2021 Census and received at least one PBS-subsidised antipsychotic dispensing between 1st August and 31st October 2021, were included. Potentially inappropriate use of antipsychotics was assessed by four quality measures: any

drug-drug interactions (DDI), drug-disease interactions (DDSI), concomitant psychotropic medication (CPM), and prolonged duration of use (PDU). Sociodemographic factors associated with each measure were explored using multivariate logistic regression.

Results: Of the 22,710 individuals eligible for this study, 9,947 (43.8%) were using risperidone. A total of 19,576 (86.2%) people had at least 1 measure. The most common measure was CPM (N=17,560, 77.3%), followed by DDI (N=7,059, 31.1%), DDSI (N=5,125, 22.6%), and PDU (N=2,129, 9.4%). Older age, higher educational attainment and living in a remote area were associated with lower odds of having measures, while multimorbidity increased the likelihood. Residing in non-private dwellings (e.g., residential care homes) and having multiple prescribers significantly raised the odds of having DDI, CPM and PDU. Indigenous and culturally and linguistically diverse populations had significantly higher odds of DDSI but lower odds of CPM.

Conclusion: Ensuring quality use of antipsychotics in individuals with dementia remains an issue, with almost nine in ten antipsychotic users having at least one measure of poor-quality use. Future research should focus on developing strategies to optimise antipsychotic use in people living with dementia and target subgroups at higher risk.

Hospitals in the home: Medications and so much more

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Introduction: Hospitals in the Home (HiTH) models are gaining popularity in developed countries due to rising healthcare costs, worker shortages, and digital health advancements. While HiTH primarily focuses on transitioning clinical services to domestic settings, a more comprehensive approach is needed. Successful implementation requires focus on the challenges of medication management in the context of non-medical challenges, adopting a new mindset that goes beyond just providing healthcare services and digital solutions is essential. The purpose of this presentation is to describe the initiatives taken by the Department of Pharmacy, University of Copenhagen to address the HiTH phenomenon and to discuss what it means for medication management.

Method: We have raised awareness about the challenges of HiTH through several initiatives. Initially, we published op-eds in leading Danish newspapers and an article in HealthcareTransformers in 2023. In December 2023, we conducted an interdisciplinary workshop with the Centre for Privacy Studies, which led to a collaboration in writing a commentary recently sent to a scientific journal in 2025. Additionally, we have applied for funding to the Tryg Foundation to study the role of family caregivers in the challenging role of being responsible for the medication of elderly patients at home, working alongside general practitioners and researchers from The Danish College of Pharmacy Practice and the Danish Society for Patient Safety. These efforts aim to address various aspects of HiTH implementation, including privacy, patient readiness, and the role of relatives in home-based care.

Results: In our study of HiTH, we have identified three critical aspects when transitioning hospital-level care to private dwellings: 1) ensuring social and health equity, 2) safeguarding privacy and home sanctity, and 3) addressing physical and design challenges in existing living spaces.

Equity: While digital health solutions aim to promote access, they may inadvertently worsen healthcare disparities. People from diverse social and geographical backgrounds may struggle with digital equipment and services, potentially creating new inequalities in accessing care, particularly affecting those in poorer health.

Privacy and sanctity of the home: As healthcare shifts to homes, preserving their original purpose is crucial. Homes offer stability, tranquility, and privacy. On the other hand, introducing medical elements in the home can disrupt autonomy and cause stress. Consulting all parties involved and ensuring their input is essential to support the home's sanctity while implementing HiTH.

Private space – architectural and design challenges: HiTH providers must address privacy issues and architectural challenges. Introducing healthcare into homes disrupts comfort and aesthetics, especially in smaller urban living spaces. Medical equipment can clutter homes, causing stress and anxiety, particularly for underprivileged patients.

Conclusion: The initiatives listed are just the start. Our focus is on medication management complexity and the pharmacy's role in Hospital in The Home (HiTH). Successful of implementation HiTH requires collaboration beyond the medical community, including researchers who understand "home" and designers/architects who can refine space while preserving the home's dignity during HiTH integration.

Improving community pharmacists' ability and confidence to respond to suicidal patients: Results from a randomised trial

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Introduction: A growing body of global research has documented that individuals visit pharmacies prior to a

suicide attempt. Estimates of the prevalence of pharmacist interactions with patients with suicide warning signs range from 33% in the United States (US) to 84% in Australia and Canada. Although international and national pharmacy organizations have endorsed pharmacists' role in suicide prevention, suicide prevention training rates for pharmacy staff remain low worldwide. In order to equip pharmacy staff to act as suicide prevention gatekeepers (individuals who recognise suicide warning signs and refer at-risk individuals to appropriate resources), it is imperative to evaluate the effectiveness of pharmacy-focused suicide prevention training programs. The objective of this study is to determine whether a suicide prevention training program for community pharmacy staff in the US improves participants' suicide prevention outcomes.

Method: Between April 2022 to April 2023, a convenience sample of 120 community pharmacists and pharmacy technicians from the southeastern US was recruited to participate in a randomised trial. Eligible participants completed an online baseline survey and were randomised to either the control (Pharm-SAVES) or intervention group (Pharm-SAVES Plus). Pharm-SAVES is a 30-minute online training that includes didactic content, resources, and three videos that model how to respond to an individual who exhibits suicide warning signs. Pharm-SAVES Plus supplements Pharm-SAVES with two interactive video cases. Both trainings recommend the use of the US National Suicide Prevention Lifeline (988) for referrals. Immediately after completing the training, participants completed a post-training survey. The baseline, post-training, and 1-month follow-up surveys assessed suicide prevention knowledge, gatekeeper self-efficacy, and gatekeeper preparedness. The baseline and post-training surveys also included a written case that asked participants how they would respond to a hypothetical patient with suicide warning signs. Case responses were independently coded by two coders who were blinded to both time (baseline or post-training) and study group assignment. For each response, coders reached consensus on whether participants directly asked about suicide and referred patients to 988. Generalized Estimating Equations (GEE) were used to examine whether scores on the outcomes of interest varied over time (baseline, post-training, 1-month follow-up) and by intervention group (Pharm-SAVES, Pharm-SAVES Plus).

Results: Eighty-seven participants (73%) completed the immediate post-training survey and 69 (58%) completed the 1-month survey. There was no evidence that any outcome was better for individuals who received the two interactive video cases in the Pharm-SAVES Plus group. However, significant improvements by time were observed for each outcome ($p<0.01$), including a 2-point increase in suicide prevention knowledge on a 9-point scale, a 1-point increase in self-efficacy on a 5-point scale, and a 2-point increase in gatekeeper preparedness on a 7-point scale. The percentage of participants who directly asked about suicide in their written case response increased significantly from 10% at baseline to 71% at post-training, and 988 referrals increased from 54% at baseline to 74% post-training.

Conclusion: Both Pharm-SAVES and Pharm-SAVES Plus improved participants' suicide prevention outcomes, including communication and referral behaviors. Future work should examine whether participants were able to apply the training in their practice.

Evaluation of drug distribution system in Nigeria: A case study of south-western Nigeria

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Introduction: In Nigeria, drug distribution has been termed chaotic because it does not adhere to the ideal channels prescribed by the World Health Organization. While the National Drug Policy (NDP) on drug distribution adopted from WHO emphasized that rational drug distribution channels should be promoted in both public and private sectors, the National Drug Distribution Guidelines (NDDG) of 2012 was set up to strengthen this provision. This study aims to assess the state of drug distribution system in Nigeria using performance indicators to assess the effectiveness of the National Drug Policy on drug distribution system in Nigeria.

Methods: This study employed a quantitative research method among stakeholders in Southwest Nigeria. By using stratified random sampling method to select different areas of pharmacy practice, the study was conducted among 349 pharmacist stakeholders who were conveniently sampled from four major areas of practice over a period of six months: retail, wholesale/distribution, manufacturing, and importation. With the use of semi- structured questionnaires, data were elicited from the selected stakeholders and were analyzed using statistical methods such as frequencies, percentages, means, standard deviations, and chi square while p value set at < 0.05.

Results: Response rate was 93.7%. Majority of respondents were retailers (265,81%), 24(7.3%) were wholesalers and 38(11.6%) importers/manufacturers. Most of the respondents were male (195,59.6%), age range 30-39 years (109,33.3%), had B.Pharm/ B.Sc (203,62.1 %) as their highest degree while 77.4% of the pharmacies have current registration status with the Pharmacy Council of Nigeria (PCN).

Majority of the stakeholders (91.4%) perceived the drug distribution channel as chaotic. The primary contributing factors were poor implementation of drug laws (96.3%), the existence of open drug markets (95.7%), non-professional in business (94.5%), and operation of unlicensed patent medicine shops (91.4%). About 65.1% and 50.8% of respondents were aware of the NDP's provisions on drug distribution and NDDG respectively. Although 35.8% consent

that they contributed to the chaotic drug distribution, their practices did not totally align with the policy and guidelines.

Retailers primarily sourced from wholesalers (54.3%), manufacturers/medical representatives (36.6%) and few from open drug markets (7.9%). The retailers also perform other activities such as hospital supplies (39.5%) and wholesaling (12.5%). While wholesalers sourced from manufacturers (91.7%) and importers (58.3%) as expected, 25% of them engaged in retailing and their customers included patients/ clients (37.5%) and many were unsure if their customers were licensed by the PCN (45.8%).

Importers and manufacturers predominantly used wholesalers/distributors and sales representatives for their marketing their products, others use retailers and open drug markets. A significant portion distribute through wholesalers/distributors (84.2%), while others through hospitals (52.6%), retailers (31.6%) and open drug markets (26.3%).

Sex, education status and years of practice of the respondents have significant effect on the contribution to chaotic drug distribution and awareness of NDP and NDDG ($p< 0.001$).

Conclusion: Drug distribution system remain chaotic despite existing NDDG and NDP. The government needs to strictly implement and enforce the existing policy and guidelines.

Acceptance of Nigerian-made COVID-19 Vaccines: A socio-demographic analysis

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Background: This study aims to identify socio-demographic predictors of acceptance of Nigerian-made COVID-19 vaccines. Africa's reliance on foreign vaccines underscores the need for local production. Additionally, vaccine hesitancy, fueled by misinformation and cultural beliefs, necessitates understanding factors influencing acceptance to develop targeted public health strategies.

Methods: A cross-sectional study was conducted in four major markets in Lagos State, Nigeria—Balogun, Yaba, Mushin, and Oyingbo. Participants aged 18 years or older, residing in Lagos, and fluent in English were recruited using a consent-based approach. Data were collected via a Qualtrics survey administered by trained research assistants familiar with the study area. The survey captured sociodemographic characteristics, including age, gender, marital status, religion, tribe, education, and employment. The primary outcome was willingness to accept a Nigerian-made COVID-19 vaccine, categorized as "Yes" or "No." Frequency distributions of categorical variables were generated using PROC FREQ in SAS, while chi-square tests examined associations between age groups and willingness to accept the vaccine. Logistic regression modeled vaccine acceptance against predictor variables, with statistical significance set at $p < 0.05$.

Results: Of 388 participants, 335 responses were analyzed after accounting for missing values. The largest age group was 25-34 (30.15%, n=101), followed by 35-44 (28.36%, n=95), with 58.51% of participants aged between 18 and 35. Most were female (60.60%), married (61.49%), educated (96.12%), employed (75.22%), Christian (55.22%), and Yoruba (65.07%). Among 335 respondents, 55.82% had received a foreign-made COVID-19 vaccine, while 75.82% were willing to accept a Nigerian-made vaccine.

A chi-square test of independence showed a significant association between age and willingness to accept a Nigerian-made vaccine, $\chi^2(5, N = 335) = 18.10$, $p = 0.0028$, indicating variation across age groups. The Mantel-Haenszel chi-square test for trend was also significant, $\chi^2(1, N = 13.95, p = 0.0002)$, suggesting a linear relationship between age and vaccine acceptance.

Logistic regression analysis showed a significant model fit ($p < 0.0001$). Key predictors of vaccine acceptance included age, religion, and tribe. Individuals aged 45-54 had significantly higher odds of accepting the vaccine compared to those aged 18-24 (OR = 6.54, 95% CI: 1.73–24.79, $p = 0.0212$). Christians had lower odds of acceptance than Muslims (OR = 0.41, 95% CI: 0.20–0.83, $p = 0.0402$). Individuals from non-Yoruba tribes had lower odds of acceptance than Yoruba participants (OR = 0.34, 95% CI: 0.12–0.93, $p = 0.1008$), though this result approached but did not reach statistical significance.

Conclusions/Implications: Findings suggest that age, religion, and tribal affiliation significantly predict acceptance of Nigerian-made COVID-19 vaccines. Higher acceptance rates among older individuals and Muslims highlight the need for tailored vaccine campaigns. These results underscore the importance of culturally and demographically sensitive health interventions to enhance vaccination coverage in diverse populations.