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Practices**

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## ORAL PRESENTATION



## Abstract 001

### Revolutionising Medication Reconciliation For Elderly Care With SafeMeds Application: A Study Protocol

**Ganesh Sritheran Paneerselvam**<sup>1,2\*</sup>, **Chong Pei Pei**<sup>2,3</sup>, **Goh Wei Wei**<sup>2,4</sup>, **Navid Ali Khan**<sup>2,4</sup>, **Farzeen Ashfaq**, **Khalid Abdullah Abuzaid**

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#### ABSTRACT

**Background:** Pharmacists in Malaysian public hospitals face challenges such as staff shortages and time constraints, impacting patient care. The high patient load, especially among the growing elderly population with complex medication needs, hinders thorough medication reviews. The elderly in Malaysia, facing increased comorbidity, use multiple medications, leading to polypharmacy and medication-related problems. Additionally, the ageing process makes elderly patients more susceptible to adverse drug reactions due to metabolic changes and reduced drug clearance. Existing time pressures exacerbate these issues, emphasising the urgent need for an innovative solution. The proposed SafeMed app aims to address these challenges by offering a user-friendly platform to enhance medication safety and improve elderly patient care in Malaysian hospitals. **Method and Design:** The SafeMeds mobile application's development will adhere to a systematic methodology: identifying user requirements through literature reviews and consultations, followed by meticulous design and development. A pilot study will assess usability and guide modifications, leading to a randomised controlled trial among hospital pharmacists. Data analysis will evaluate SafeMeds' effectiveness in improving reconciliation outcomes. The study will conclude with evidence-based recommendations for the application's adoption and implementation in healthcare settings, ensuring a comprehensive approach within a limited framework. **Conclusion and Discussion:** We hypothesise that the SafeMed application will improve medication-related challenges and improve care for elderly patients in Malaysian public hospitals. Its innovative features will streamline pharmacists' review processes, reducing the risk of adverse drug reactions. The application will also enhance medication safety and reduce the workload on pharmacists, aligning with United Nations Sustainable Development Goal 3 whose initiative contributes to the pursuit of healthy lives and well-being for individuals of all ages. **Trial**

**registration:** Ethical approval has been obtained from Taylors University Ethics Committee, ID NO: 202127-9811.

## Abstract 002

### A Comparison Retrospective Study On The Efficacy of Azvudine And Traditional Chinese Medicine In The Treatment of COVID-19

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#### ABSTRACT

**Background and objective:** Coronavirus disease (COVID-19) has become a global pandemic and posed serious threats to the general population. Many therapeutic drugs are employed for the COVID-19 treatment. However, there is a paucity of data on comparison of the currently available drugs with Traditional Chinese Medicine in terms of their efficacy. The objective of this study is to compare the efficacy of Azvudine (FNC) and Traditional Chinese Medicine (TCM) in the treatment of mild and moderate cases of coronavirus disease (COVID-19). **Methods:** Patients admitted in a public hospital in Zibo City, China between November 2022 and June 2023 for treatment of COVID-19 either with Azvudine (FNC) or Traditional Chinese Medicine (TCM) or a combination of FNC + TCM were enrolled in this retrospective study. **Results and Discussion:** A total of 307 confirmed cases of COVID-19 fulfilling the inclusion criteria, and having definite outcomes were included. The mean age of participants was 64.9 ( $\pm 16.9$ ) years and males, n=176 (57.3%) outnumbered females. The duration of negative nucleic acid conversion (NANC), an indicator of drug efficacy and clinical improvement, was significantly lower for patients in the group receiving a combination therapy of FNC + TCM (6.80 days, p< 0.001). The time to chest CT improvement was significantly reduced in the combination treatment group (8.81 days, p< 0.001). Similarly, the duration of hospital stay was also significantly lower i.e. 12 days at p< 0.035 in the group receiving the combination treatment as compared to the groups receiving either FNC monotherapy or TCM alone. **Conclusion:** FNC combination with TCM has a significant clinical efficacy in the treatment of mild and





moderate cases of COVID-19, which is worthy of further larger scale study and clinical application.

## Abstract 003

### The Use of ATLAS, a Generative AI Tool in Preparing Pharmacy Students for OSCEs

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#### ABSTRACT

**Background and Objective:** Students often require more practice to prepare for high-stakes clinical examinations, such as Objective Structured Clinical Examinations (OSCEs). ATLAS (Authentic Teaching & Learning Application Simulations) is a prototype that harnesses cutting-edge Large Language Model technologies to enable patient avatars in the software to offer human-like responses and real-time, tailored feedback of the users' clinical and communication skills. It has the potential to develop clinical skills such as history-taking and clinical reasoning. This study aimed to evaluate the usability and acceptability of ATLAS. **Methods:** A quasi-experimental study was conducted in a Year Two pharmacy unit across Monash campuses in Malaysia and Australia. Students volunteered to practise with patient avatars simulating community pharmacy settings before their OSCEs. Data encompassing ATLAS attempt counts, OSCE scores, and tool perceptions were systematically collected and analysed. **Results and Discussion:** 385 students participated in the survey, with 91.4% practising at least one history-taking case. The cohort in Malaysia responded more positively to the tool than the Australian. Overall, students perceived the tool as realistic, engaging, interactive, and able to maintain their interest. Students desired more scenarios to practise with. They agreed that the tool effectively taught them patient-friendly language and an empathetic approach. However, they disagreed that the feedback was less offensive than that of traditional tutors. Median OSCE scores improved with increased ATLAS practice from 0.80 with no attempts to 0.90 after six attempts. Regression analysis showed a significant impact of ATLAS usage on OSCE marks ( $p=0.01$ ). **Conclusion:** ATLAS shows potential for clinical skill development by providing a realistic environment for

safe, unrestricted practice, addressing the challenges of organising face-to-face practice sessions, which can be both costly and labour-intensive.

## Abstract 004

### Exploring the Potential of Incorporating Community Pharmacists in Tuberculosis Management

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#### ABSTRACT

**Background and Objectives:** The Public-Private Mix (PPM) has been advocated as one of the catalysts to accelerate efforts in tuberculosis (TB) control and prevention. Community pharmacists can play a role in improving TB case detection and treatment outcomes, but these roles have not been explored in Malaysia. This study aimed to evaluate the perspectives of various stakeholders towards the potential of community pharmacy-based TB services in Malaysia. **Method:** A qualitative study was performed. Thirty-two participants from three groups of stakeholders: policymakers, healthcare professionals (pharmacists, doctors, clinicians), and the community (TB survivors, TB patients, people with latent TB infection, non-governmental organisations, and the public) participated in a one-on-one semi-structured interview. All interviews were transcribed verbatim and analysed using an inductive thematic content analysis approach rooted in grounded theory. **Results and Discussion:** Three main themes were identified in this study: (1) The Service gap in the TB care cascade; (2) The expansion of the professional role of community pharmacists in improving access to TB services; and (3) The availability of resources to facilitate community pharmacy-based TB services. Findings suggested that community pharmacists could play an active role as the point of referral and as the supervisor in monitoring TB-directly observed therapy (TB-DOT). Participants also agreed collective support is needed to strengthen PPM for community pharmacists to expand their professional role and service in TB management. **Conclusion:** Community pharmacy-based TB interventions were viewed as a novel and potential strategy for contributing to the National TB Control Program, where community pharmacists could potentially improve the accessibility to TB services in primary care settings. Educational interventions for TB awareness to all members of society are the fundamental cornerstones to enhance the understanding of



the urgent need to address the service gaps in TB care through community pharmacists.

as a guide for strategic interventions to effectively encourage the use of digital health technology among T2DM patients.

## Abstract 005

### Exploring Factors Influencing Acceptance of Digital App Usage for Medication Adherence Enhancement in Type 2 Diabetes Mellitus

**Cheng Jun Chong<sup>1\*</sup>, Mohd Makmor-Bakry<sup>1,4</sup>, Ernieda Hatah<sup>1</sup>, Nor Asyikin Mohd Tahir<sup>1</sup>, Norlaila Mustafa<sup>2</sup>, Francis R. Capule<sup>3</sup>, and Andi Hermansyah<sup>4</sup>**

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#### ABSTRACT

**Background and Objectives:** Non-adherence to antidiabetic treatment remains suboptimal. Digital applications (apps) have demonstrated positive impacts on adherence and glycemic outcomes. However, the factors influencing type 2 diabetes mellitus (T2DM) patients' acceptance of using apps to improve adherence are still unclear. Therefore, this study aimed to explore the perspectives of T2DM patients in using apps for medication adherence enhancement. **Method:** By employing a qualitative phenomenological approach, 25 semi-structured in-depth interviews were conducted. All interviews were audio-recorded and transcribed verbatim. Thematic analysis was utilised to identify the factors. **Results and Discussion:** Three primary themes affecting perceived usefulness emerged: medication, patient, and healthcare professional-related factors. Three key themes affecting perceived ease of use emerged: patient, app, and family-related factors. Patients perceived that digital apps were beneficial for individuals with poor adherence, complex medication regimens and forgetfulness issues, especially if recommended by healthcare professionals with additional family support. However, concerns regarding effective implementation were raised because of the technical challenges encountered by late middle-aged T2DM patients, suggesting a combination approach integrating digital technology and conventional patient education and counselling. **Conclusion:** This study highlighted the factors influencing patients' acceptance of digital health solutions to improve medication adherence. The proposed factors serve

## Abstract 006

### Comparison of Direct Proportion Approach (Investigated) versus Conventional Method (Standard) For Dose Adjustment of Carbamazepine

**Calvin Chee Yang Loh<sup>1\*</sup>, Yen Ping Ng<sup>1</sup>, Jing Ng<sup>2</sup>, Boon Seng Tan<sup>1</sup>, Jin Yi Choo<sup>1</sup>, Kwok Wen Ng<sup>1</sup>, Shu Ying Looi<sup>1</sup>**

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#### ABSTRACT

**Background and Objectives:** Therapeutic Drug Monitoring (TDM) is extremely useful and significant for drugs with a narrow therapeutic index. One of the common drugs requiring TDM is carbamazepine. Conventional pharmacokinetic approach in drug dosage adjustment presents a problem of applying a rather complex formula and multiple steps in calculating the dosage adjustment. Direct proportion method involves two variables such as dose and concentration in the calculation while conventional pharmacokinetic approach requires multiple variables such as dosing interval, clearance, concentration at steady state, salt factor and bioavailability. This study aimed to determine the magnitude of difference and the level of agreement between the conventional pharmacokinetic equation method (standard) and the direct proportion approach in CBZ dose adjustment. **Method:** This was a retrospective study conducted at Therapeutic Drug Monitoring Department, Sultan Abdul Halim Hospital, Kedah, Malaysia. A sample size of 5 which required CBZ dose adjustment based on their concentration from 1st January 2022 to 31st December 2022 was included into the study in which the median age was 36 years old with a median weight of 74kg. Males represented 80% of the population. Calculations of actual cases requiring CBZ dose adjustment in hospital were done using both Conventional pharmacokinetic approach and Direct proportion method. The final answers were then compared using SPSS to check for statistical significance. Statistical analysis included one sample T test and Bland Altman analysis. **Results and Discussion:** The propose dose adjustments were identical using the conventional (multiple steps) approach and the direct proportional method (1 step),  $p = 1.00$ . One sample T test was used to analyze the mean differences of proposed dose adjustments based on direct



proportion method to a value of zero (no difference). The mean differences of proposed dose adjustments were non statistically significant ( $p > 0.05$ ). Bland-Altman analysis showed good agreement of the proposed dose adjustments by direct proportion method with the conventional (standard) approach,  $p = 1.00$ . **Conclusion:** The results from this study gave strong assurance and evidence that direct proportion method could be used safely as an alternative to the conventional pharmacokinetic equation method (standard) in the calculation of new maintenance dose for CBZ.

## Abstract 007

### Complementary and Alternative Therapies (CATs) are Positively Perceived and Highly Utilised by Epilepsy Patients on Anti-Epileptic Drugs (AEDs)

**A Samat, N.L.<sup>1</sup>, Jamshed, S.<sup>2</sup>, Long C. M.<sup>3</sup>, Abdul Jamil, A. K. A.<sup>1</sup>, Ahmad, N.<sup>1</sup>, Jamil, A.<sup>1</sup>, Lim K. S.<sup>4</sup>, Husin, M.<sup>5</sup>, Ibrahim, K. A.<sup>5</sup>, Humaidi, N.<sup>5</sup>, Basiam, S.<sup>6</sup>, Mohd Daud, S. M.<sup>7</sup> and Lua P. L.<sup>1\*</sup>**

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#### ABSTRACT

**Background and Objectives:** The main objective in epilepsy treatment is to control seizures, minimize adverse effects, and enhance quality of life. Dissatisfaction with anti-epileptic drugs (AEDs) may drive patients with epilepsy (PWEs) to seek alternative treatment like complementary and alternative therapies (CATs), possibly impacting on AED adherence. The aims of this study were to assess perception and utilization on CATs and its association with adherence. **Method:** A cross-sectional study was carried out at neurology clinics in three government hospitals in Peninsular Malaysia. The perception and utilization of CATs were assessed using a validated questionnaire, while Malaysian Medication Adherence Scale (MALMAS) evaluated

adherence. Using SPSS 26, descriptive statistics and chi-square test were utilized to determine the association between CAT usage and adherence. **Results and Discussion:** Eighty-six PWEs were selected through convenience sampling (mean age =  $33.9 \pm 11.3$  years; 59.3% female; 51.2% unmarried; 94.2% Malay). Eighty percent admitted to using CATs. The most common being prayers (64.0%), massage (44.2%), structured exercise such as yoga (29.1%) and vitamins and supplementations (22.4%). While 40.7% disagreed that CATs can provide quick and additional relief in treating epilepsy, the majority agreed that CATs are cheaper than modern medicine (31.4%), easily accessible (55.8%), promoting self-healing (37.2%), and solely for treating minor illnesses (43.0%). Additionally, 45.3% acknowledged that people generally use CATs due to fear of discomfort from allopathic treatment. Nevertheless, a high level of AED adherence (41.9%) was recorded i.e. all MALMAS questions were fully-scored. Encouragingly, no significant association was observed between AED adherence and CAT usage ( $p > 0.05$ ). **Conclusion:** Despite the positive perception and high utilization of CATs by PWEs, their usage was unrelated to adherence. Healthcare professionals should regularly monitor potential interactions between CATs and AEDs to ensure the effectiveness of AEDs and prevent adverse effects.

## Abstract 008

### Investigating HbA1c reduction and incidents of reported hypoglycaemia between human insulins versus analogue insulins among type 2 diabetic mellitus patients - A Single Centre, Retrospective Study

**Hui Mun Teh<sup>1\*</sup>, Yen Ping Ng<sup>1</sup>, Jin Yi Choo<sup>1</sup>, Jing Ng<sup>2</sup>, Boon Seng Tan<sup>1</sup>, Kwok Wen Ng<sup>1</sup>, Shu Ying Looi<sup>1</sup>**

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#### ABSTRACT

**Background and Objectives:** Two types of exogenous insulin are available within the realm of diabetes treatment: human insulins and analogue insulins. Studies have shown that both human insulins and analogue insulins performed similarly in reducing blood glucose without significant changes in the frequency of serious hypoglycaemic episodes. This study aimed to determine the magnitude of difference in



terms of HbA1c reduction and explore the incidents of reported hypoglycaemia among T2DM patients receiving human insulins (premixed) and analogue insulins (premixed). **Method:** This was a retrospective study conducted in one primary public health clinic in the state of Perak, Malaysia. All type 2 diabetes patients who fulfilled the inclusion criteria were identified and recruited for analysis. Sugar profiles and incidents of reported hypoglycaemia in patients receiving human insulin and analogue insulin were compared. The results were analysed by using Independent t-test and Chi-square test with IBM SPSS Statistics (Version 29) to determine statistical significance. **Results and Discussion:** No significant HbA1c reduction was noted among patients receiving human insulin therapy. Instead, the results showed an increased HbA1c level of 0.11 %,  $p = 0.347$ . Meanwhile, for the analogue insulin group, a reduction of HbA1c by 0.99 % was observed,  $p = 0.004$ . A total of 13 (37.14%) incidents of hypoglycaemia were reported among patients receiving human insulin. On the other hand, 3 (8.57%) incidents of hypoglycaemia were reported in patients receiving analogue insulin. **Conclusion:** Premixed human insulins and analogue insulins might not perform similarly in terms of reducing HbA1c and incidents of hypoglycaemia. Analogue insulin was associated with better HbA1c control and significantly lesser incidents of reported hypoglycaemia. Optimal control of postprandial blood sugar is equally important.

breastfeeding practices among pregnant and postpartum women. The objectives include enhancing breastfeeding intention and self-efficacy in pregnant women and reducing anxiety and depression while improving self-efficacy in breastfeeding mothers. **Method:** The study will involve training community pharmacists as breastfeeding-friendly pharmacists. Subsequently, a mixed-method approach, consisting of two studies, will then be conducted to evaluate the pharmacist-led interventions for pregnant and breastfeeding mothers. Study 1 targets pregnant women, whereby the intervention will increase their intention to breastfeed and self-efficacy. Study 2 targets breastfeeding women, whereby the intervention will reduce their anxiety and depression as well as increase their intention to continue breastfeeding and self-efficacy. For both studies, the cross-sectional study design will evaluate the pre-post improvement following the intervention. Follow-up evaluations will be conducted up to 2 months postpartum to assess breastfeeding practices, supplemented by qualitative feedback on the intervention's feasibility and effectiveness. **Results and Discussion:** Pharmacists will be trained to be more breastfeeding-friendly. Expected outcomes include improved breastfeeding intention and self-efficacy in pregnant women (Study 1), and enhanced postpartum mental health, self-efficacy, and breastfeeding continuation in mothers (Study 2). Follow-up results and qualitative feedback will inform the intervention's effectiveness and feasibility, leading to improved future interventions. **Conclusion:** Community pharmacists, as the most accessible healthcare professionals, can offer critical breastfeeding support in primary care settings. This model will further inform a scalable approach to improving breastfeeding rates and maternal well-being in Malaysia, aligning with national health objectives and global breastfeeding recommendations.

## Abstract 009

### Breastfeeding-Friendly Community Pharmacists to Support Mothers for Successful Lactation and Combating Anxiety and Depression: A Protocol of Pilot-Testing Study in Malaysia

Freda Jia Xin Jong<sup>1</sup>, Yen Jun Wong<sup>2</sup>, Jia Jia Lee<sup>2</sup>, Leong Seng Wang<sup>2</sup>, Shaun Wen Huey Lee<sup>2</sup>, Siew Li Teoh<sup>2\*</sup>

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#### ABSTRACT

**Background and Objectives:** Breastfeeding rates in Malaysia are lower than the Ministry of Health's and World Health Organisation's targets, only 47% exclusively breastfed infants compared to 58% and 70% set targets respectively. The role of community pharmacists is limited in pregnant and breastfeeding women. This study aimed to evaluate the impact of pharmacist-led interventions on



## Abstract 010

### Assessing the Magnitude of Blood Pressure Reduction in Newly Diagnosed Patients Treated with Perindopril or Amlodipine Monotherapy at Various Dosages – A Retrospective, Multicenter Observational Study

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#### ABSTRACT

**Background and Objectives:** Hypertension is a well-established modifiable risk factor for the spectrum of cardiovascular diseases. What is being missed from available clinical practice guidelines in managing hypertension is the absence of data on the magnitude of reduction (%) or mean BP reduction potential of individual antihypertensive agents. This study aimed to identify the magnitude of BP reduction of the two most common antihypertensive agents (perindopril and amlodipine) at various dosages used in public primary care clinics in Malaysia. **Method:** This was a multicentre, retrospective and observational study that identified the magnitude of the BP reduction of perindopril and amlodipine from 1<sup>st</sup> January 2017 to 30<sup>th</sup> of September 2019. The study was conducted at six primary public health clinics in the Northern Region of Malaysia. **Results and Discussion:** A significant reduction of mean SBP was observed after three months of treatment with perindopril 4 mg OD. Mean SBP was reduced significantly by 5.47% (95% CI: 4.15-12.15,  $p < 0.001$ ). However, there was no statistically significant reduction in mean DBP ( $p = 0.368$ ). Amlodipine 5mg OD reduced both mean SBP and DBP significantly. Mean SBP was reduced by 8.48% after 3 months of treatments ( $p < 0.001$ ) while mean DBP was reduced by 4.65% ( $p < 0.001$ ). Amlodipine 10mg OD reduced mean SBP and DBP significantly. Mean SBP was reduced significantly by 9.04% ( $p < 0.001$ ). Mean DBP was reduced significantly by 7.22% ( $p = 0.001$ ). **Conclusion:** The mean BP reduction by perindopril 4mg OD in the study population was 5.47%/1.23%. Amlodipine 5mg OD, and 10mg OD reduced mean BP in the study population by, 8.48%/4.65%, and 9.04%/7.22% respectively. The result of this study shall provide the mean BP reduction of both commonly used antihypertensive agents.

## Abstract 011

### Development and Validation of the Malay HIV Knowledge Questionnaire (HuSKQ-Malay) Among Human Immunodeficiency Virus Infected Individuals in Malaysia

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#### ABSTRACT

**Background and Objective:** In people living with the human immunodeficiency virus (PLWH), self-care is important, as it empowers PLWH to attain better control of their health. To date, no questionnaire has been developed to assess knowledge on human immunodeficiency virus self-care. Hence, our aim was to develop and validate the Malay HIV Knowledge Questionnaire (HuSKQ-M) among PLWH. **Methods:** The HuSKQ-M was initially developed in English based on literature review and input from an expert panel. It was then translated into Malay and piloted among ten PLWH. The final version of the HuSKQ-M had 29 items in 3 domains: physical health, psychological functioning, and social relationship. It was then administered to PLWH [CD4 count of  $> 200$  cells/mm<sup>3</sup>], who understood Malay, aged  $\geq 21$  years, on treatment for  $> 3$  months; from March to October 2022, at a tertiary hospital in Malaysia at baseline and 2 weeks later. Each participant took approximately 15 minutes to answer the questionnaire. **Results & Discussion:** 149/168 PLWH participated (response rate=88.7%). Majority were male (88.6%) with a median age of 41.0 years. Kaiser-Meyer-Olkin measure of sample adequacy was 0.835 and Bartlett's Test of Sphericity was 0.000 indicating an adequate sample size to perform factor analysis. Exploratory factor analysis revealed that the HuSKQ-M had 4 domains: (1) misconception and understanding HIV; (2) transmission and prevention; (3)



treatment and management; (4) stigma and consequences. The overall Cronbach alpha was 0.892 (individual domains ranged [0.0-100.0]). The HuSKQ-M was able to discriminate the knowledge level of patients with and without postgraduate education ( $64.6 \pm 22.1$  vs  $83.2 \pm 8.6$ ,  $p < 0.05$ ). At retest, 102/149 PLWH participated (response rate = 68.5%) and 26/29 items were not statistically significant, indicating adequate reliability. **Conclusions:** The HuSKQ-M was found to be a valid and reliable questionnaire for evaluating HIV self-care knowledge in Malaysia.

revealed a high prevalence of unused medicines. To address this issue, potential measures include promoting rational prescribing practices, optimizing medication dispensing quantities, educating patients on adherence, and expanding the reach and awareness of MRP programs in private healthcare facilities.

## Abstract 012

### Factors associated with unused medicines: a cross-sectional study

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#### ABSTRACT

**Background and Objective:** The presence of unused medicines significantly impacts the economy and environment. Understanding the factors associated with this issue is crucial. This study aims to identify these factors influencing the accumulation of unused medications. **Methods:** A cross-sectional survey was conducted using face-to-face interviews and a structured questionnaire. Participants were recruited through convenience sampling in Kuala Lumpur and Selangor, Malaysia. Multivariate logistic regression analysis was employed to examine the associations between factors and unused medicines. **Results:** Among 1184 participants, 84% (995) reported having unused medicines. About a quarter of respondents kept unused medicines in the cabinet, and another quarter disposed of them in the trash or toilet. Individuals using medications for acute illnesses were significantly more likely to have unused medications compared to those with chronic conditions (Odds Ratio [OR] = 29.8, 95% CI 7.03-126.56). Additionally, participants who paid for their medicines (OR = 6.0, CI 3.81-9.49) and those unwilling to participate in a Medicine Return Programme (MRP) (OR = 2.5, CI 1.26-5.03) were more likely to have unused medications. The primary reasons for having unused medicines were non-adherence (69%,  $p < 0.05$ ) and improvement in health conditions leading to medication discontinuation (79%,  $p < 0.05$ ). **Conclusion:** The study



## POSTER PRESENTATION



## Abstract P01

# A Comparative Study of Deproteinisation Techniques for Extracting Polysaccharides from *Rosa roxburghii* Fruits

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### ABSTRACT

**Background and Objectives:** *Rosa roxburghii* fruits are known for their health benefits. Its polysaccharides can be extracted using water. However, the presence of proteins in the water extract poses a challenge to achieving high-quality polysaccharides. The study aimed to determine the best deproteinisation techniques for polysaccharides from *R. roxburghii* fruit and to evaluate its purity. **Method:** *R. roxburghii* fruits were collected, sun-dried and powdered based on the previous study. The powdered sample was extracted with water at 80 °C for 4 hours. The crude extract was filtered and decolourised using polyamide resin. The decolourised extract was then concentrated using a rotary evaporator at 60 °C. The concentrated extract was then deproteinised using (i) NaCl-gelatin method, (ii) trichloroacetic acid method, or (iii) cellulose semi-permeable membrane method. The polysaccharide recovery of the deproteinised extract was calculated and compared. **Results and Discussion:** Our study showed that the cellulose semi-permeable membrane had the best ultrafiltration efficiency of polysaccharides from *R. roxburghii* fruits and the highest polysaccharides recovery ratio. **Conclusion:** The deproteinisation method using cellulose semi-permeable membrane has the highest quality, and is cost-effective, simple to perform, eco-friendly, and scalable. This study provides new insights into the technique of purifying the polysaccharides from *R. roxburghii* using a cellulose semi-permeable membrane. This achievement may add value to the comprehensive application of *R. roxburghii*.

## Abstract P02

# GCMS Analysis And Antimicrobial Activities of Different Extracts Of *Clitoria Ternatea*

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### ABSTRACT

**Background:** *Clitoria ternatea* (CT), belongs to the family Fabaceae, which is a highly valued medicinal plant. Locally this is also known as the Butter pea flower. This plant (flower part) is found to contain different kinds of metabolites. These metabolites could help in the treatment of various kinds of diseases. The aim of the present work was to carry out GCMS and antimicrobial evaluations of different flower extracts of CT. **Methods:** The dried CT flower was macerated in methanol and fractionated into different solvent extracts like hexane, chloroform, and ethyl acetate. GCMS analysis was carried out, and compounds were identified by the NIST 2008 library, whereas in vitro antimicrobial activities were performed by well diffusion methods. **Results & Discussion:** A total of 10 and 17 compounds were identified in methanolic and hexane extracts, respectively. Oxalic acid, isobutyl nonyl ester, is found to be present in the highest concentration (18.81%) and identified at RT 5.13 in methanolic extract, whereas 2-Ethylacridine is found to be present in the highest concentration (23%), identified at RT 44.04 min in hexane extract. An antibacterial study shows that methanolic extract and ethyl acetate fraction were found to exhibit border antibacterial effects. Apart from this, this ethyl acetate fraction also shows good scavenging activity in another study conducted in the same lab. **Conclusion:** LCMS analysis successfully planned to explore the different metabolites present in the ethyl acetate fraction, which can help to isolate pure antimicrobial compounds.





## Abstract P03

### Impact of Drug Pricing on Medication Adherence: A Narrative Review

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#### ABSTRACT

**Background and Objective:** The escalating costs of pharmaceuticals pose a formidable challenge to healthcare, influencing patients' ability to adhere to prescribed treatment plans. This review analyzes the relationship between drug pricing and medication adherence, highlighting the urgent need for deeper understanding of this interaction in contemporary healthcare. **Method:** The review employs a narrative approach, shaping concepts and keywords aligned with the research question: "What is the relationship between drug pricing and medication adherence?" A systematic search, utilizing Medical Subject Headings (MeSH) terms, conducted on the PubMed database, and inclusion and exclusion criteria are applied for article selection. **Results and Discussion:** Pharmacoepidemiologic analyses unveil the impact of drug pricing on medication adherence. Studies on hypertension, antiplatelet and anticoagulant therapies, heart failure, and peripheral arterial disease illustrate varied adherence rates based on drug pricing. Factors such as financial incentives, refill reminder programs, and out-of-pocket costs play crucial roles, revealing disparities across different patient populations. The discussion synthesizes findings from diverse studies, emphasizing the role of single-pill formulations, financial programs, and strategic drug choices in mitigating the impact of drug pricing on adherence. Collaboration among healthcare professionals, policymakers, and pharmaceutical companies emerges as a key recommendation to address drug pricing challenges comprehensively. **Conclusion:** In conclusion, this review provides valuable insights into strategies for enhancing medication adherence amid rising drug prices. The findings underscore the importance of tailored interventions, proactive healthcare, and collaborative efforts to create a more equitable and sustainable healthcare system. The multifaceted nature of the issue necessitates a comprehensive approach to improve patient outcomes and accessibility.

## Abstract P04

### Effectiveness Of Medication Coverage Checking Tool In Reducing Non-payment For Insurance and Corporate Patients At KPJ Ipoh Specialist Hospital

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#### ABSTRACT

**Background and Objectives:** Managing medicine coverage in private hospitals is complex, particularly in identifying and collecting payments for non-covered medications. At KPJ Ipoh, 62.5% of patients are covered by insurance or Managed Care Organisations (MCOs), each with unique health coverage policies that pharmacy staff are required to interpret. Over 2500 patients were contacted in 2019 to make payment on uncovered medicine after being notified by insurance or MCO companies which disrupted pharmacist flow in the pharmacy. The medicine coverage checking tool was created to enhance patient satisfaction, reduce the workload on staff calling patients, improve the efficiency of medication payment processes and reduce the patient's financial burden of non-covered medication costs. **Method:** A comprehensive review of outpatient pharmacy data spanning five years (2019-2023) to analyse the costs associated with uncovered medications and the total outstanding payments due to non-payment. The patient satisfaction and time taken to check coverage prior to and post-implementation of the tool were measured. A root cause analysis was conducted to also determine the reason for many non-covered medicines released to the patients. **Results and Discussion:** Lack of clear guidelines and staff knowledge to identify non-covered medicine was identified through root cause analysis as a major contributor to previous inefficiencies. The implementation of the medicine coverage tool led to significant reductions in the costs of non-covered medications and improved patient satisfaction. This tool effectively decreased the time spent on post-discharge payment collections and minimised financial losses. **Conclusion:** Future steps include continuous updating of the coverage checking tool to keep pace with changes in insurance policies and exploring further enhancements in staff training and patient communication to sustain the benefits of this tool. This approach not only improves operational efficiency but also significantly boosts patient satisfaction and financial outcomes for the hospital. This solution can also be scaled to another private hospital as well.

## Abstract P05



## Therapeutic Potential of Compound 9b Against Carbonic Anhydrase IX in Colorectal Cancer

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### ABSTRACT

**Background and Objectives:** Hypoxia is a typical feature of malignant tumors as these cells can adapt to a hypoxic environment by expressing carbonic anhydrase IX (CAIX). Sulfonamide is one of the main CAIX inhibitors. However, their inhibitory selectivity needs to be strengthened. Therefore, in this study, we synthesized compound 9b, which has the structure of benzenesulfonamide, and studied its effects on the third most common cancer in the world, colorectal cancer. **Method:** Molecular docking was performed to verify the target of compound 9b. MTT assay was performed in human colorectal cancer, SW480 cells, for anti-proliferative activity under normoxic and hypoxic conditions, and the assay was also conducted in human normal colon, NCM460 cells, for toxicity. The mechanism of cytotoxicity was studied by Annexin V-FITC/PI staining, mitochondrial membrane potential, lipid reactive oxygen species (ROS) assay, transmission electron microscopy, and Western blotting. **Results and Discussion:** Molecular docking showed that compound 9b could stably bind to the zinc atom in the active pocket of CAIX. Compound 9b exhibited good anti-proliferative activity on SW480 cells, under normoxic and hypoxic conditions, with IC<sub>50</sub> values of 17.03 ± 1.09 μM and 10.90 ± 0.46 μM respectively. Interestingly, it showed low toxicity on normal colon, NCM460 cells, with the IC<sub>50</sub> of more than 40μM. This compound inhibited SW480 cells in the G2/M phase and induced apoptosis in a concentration-dependent manner with the percentage being higher in hypoxic than in normoxic conditions. **Conclusion:** Compound 9b specifically targets CAIX and induces apoptosis dose-dependently in SW480 cells, suggesting the potential anti-tumor effects of compound 9b in colorectal cancer.

## Abstract P06

### Evaluating Management of Headaches at Community Pharmacies in a District of Perak, Malaysia Using Simulated Client Method

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### ABSTRACT

**Background and Objectives:** Minor ailments are medical conditions that can be reasonably diagnosed and managed by patients themselves or healthcare professionals. One of the most encountered minor ailments is migraine. Community pharmacies are well recognised as first-line settings to provide healthcare consultation. Community pharmacists play an important role in simple diagnosis and providing accurate and appropriate treatment to clients in managing minor ailments. The study aimed to investigate the practice of managing headaches in community pharmacies. **Method:** A migraine case scenario was developed. The researcher acted as the simulated client and visited community pharmacies located in the Manjung district, Perak. After each visit, the information gathered was immediately recorded in a data collection form. The data collection form was prepared based on "Pharmacists' Patient Care Process", a framework endorsed by the Joint Commission for Pharmacy Practitioners in 2014, OBRA'90, and was reviewed by 2 pharmacy experts. **Results and Discussion:** The simulated client visited 29 community pharmacies. The most frequently asked question was the nature of the headache experienced (79.3%), followed by medication allergy history (51.7%). None of the respondents asked for the aura symptoms. None of the respondents identified the possibility of an ibuprofen overdose migraine. All of the 29 respondents suggested medications to treat the condition. The most common information delivered in dispensing was the dose of medication (96.6%) and frequency of medication to be taken (96.6%). None of the respondents mentioned the duration of the therapy and storage of the medication. The average dispensing time was 3.5 minutes. An average of one product was dispensed. **Conclusion:** Getting a treatment for headaches in community pharmacies was time-saving. However, most pharmacists or pharmacy assistants at the studied location did not practice all the components stipulated in the patient care process. Continuous



professional training should be emphasised to ensure all aspects of the patient care process are addressed.

## Abstract P07

### Effect of Tocilizumab on Clinical Outcomes and Safety among Critically-ill Coronavirus Disease 2019 (COVID-19) Patients: A Retrospective Case-Control Study

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#### ABSTRACT

**Background and Objective:** Tocilizumab is a high-cost immunomodulatory agent that has been innovatively repurposed as an off-label treatment for Coronavirus Disease 2019 (COVID-19). Global research on its clinical application and safety in COVID-19 yielded mixed results. This prompted a need to verify previous findings locally. Our study aimed to compare the effect on clinical outcomes and safety of Tocilizumab-treatment (TOC) versus Standard-of-Care (SOC) in critically ill COVID-19 patients. **Method:** A retrospective case-control study was conducted among critically ill COVID-19 patients admitted to a Malaysian secondary care hospital between April 2020 to June 2021. Patients were randomly sampled into a TOC or SOC cohort using a 1:6 ratio propensity score (PS) matching. Information on patients' demographic, laboratory and clinical status was retrospectively reviewed from medical records. The study endpoints were clinical outcomes (all-cause in-hospital mortality, 6-point ordinal scale clinical improvement, organ support-free and inflammatory markers improvement). Complications developed post-study inclusion were monitored as safety evaluations. Comparisons between TOC and SOC were made using bivariate, multivariate as well as survival analyses. **Results and Discussion:** A total of 182 PS-matched patients were included with 26 TOC-patients and 156 SOC-patients. Our study demonstrated insignificance in mortality, clinical improvement and organ support-free after Tocilizumab administration ( $p > 0.05$ ). Despite these, Tocilizumab did show a protective effect by reducing inflammatory markers, specifically C-reactive protein (CRP) [AOR 3.727 (95% CI: 1.061 to 13.090;  $p=0.040$ )]. The frequency of complications developed was balanced between TOC and SOC ( $p > 0.05$ ). **Conclusion:** Tocilizumab significantly reduced CRP level and showed a

comparable safety profile as control. However, the CRP reduction did not improve overall survival or other clinical benefits. With the high acquisition cost of Tocilizumab, this study provided insights to guide future clinical justification for its prudent use in COVID-19, particularly when transitioning into the post-pandemic era.

## Abstract P08

### Comparison of INR Control in Non-Valvular Atrial Fibrillation Patients on Warfarin: A Multicentered Retrospective Cohort Study in Sarawak, Malaysia

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#### ABSTRACT

**Background and Objectives:** Anticoagulation control in non-valvular atrial fibrillation is challenging in both rural and urban hospitals in Malaysia. Time in Therapeutic Range (TTR) is a useful tool for measuring anticoagulation management. Limited data on TTR comparison between rural and urban hospitals. This study aims to compare the anticoagulation control between rural (Kanowit Hospital, Lundu Hospital and Marudi Hospital) and urban (Miri Hospital) and to determine the independent predictors associated with  $TTR \geq 70\%$ . **Method:** This multicenter retrospective cohort study examined patients receiving warfarin at Anticoagulation Medication Therapy Adherence Clinic (ACMTAC) service in 2021. Patient demographics, clinical characteristics, INR values and TTR in four facilities were analyzed. TTR was calculated using Rosendaal's method. Multivariate logistic regression was used to determine the independent predictors associated with  $TTR \geq 70\%$ . **Results and Discussion:** 114 patients



were included, 21.1% (n=24) of patients from Kanowit Hospital, 26.3% (n=30) from Lundu Hospital, 21.9% (n=25) from Marudi Hospital and 30.7% (n=35) from Miri Hospital. The mean TTR± SD of all hospitals was 73.18±17.78%. The mean TTR± SD for rural and urban hospitals was 71.23±17.5% and 77.6±17.8%, respectively. There was no statistically significant difference between rural and urban hospitals (p=0.267). Lower episodes of warfarin missed dose and INR test deranged are identified as the predictors of TTR ≥ 70%. (AOR=0.31, 95% CI: 0.14, 0.72, p =0.006) and AOR=0.40, 95% CI: 0.24, 0.69, p<0.001 respectively. **Conclusion:** This study reported that anticoagulation control in rural and urban hospitals is similar. Pharmacists involvements is crucial in reducing the warfarin missed dose and INR test deranged to achieve good coagulation control.

## Abstract P09

### Knowledge, Attitude And Practice (KAP) Towards Antibiotic Use and Its Resistance Among The General Public In Klang Valley, Malaysia

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#### ABSTRACT

**Background and Objectives:** Antibiotics use has increased significantly throughout the years leading to a high percentage of misuse and overuse in Malaysia which causes an increased trend of antibiotic resistance (ABR). Our hypothesis is the general public has a low level of KAP towards antibiotic use and its resistance. This study aims to determine the knowledge, attitude and practice (KAP) towards antibiotics use and its resistance among the general public in Klang Valley, Malaysia. **Method:** A cross-sectional study was conducted using a pre-validated questionnaire that comprised sections of socio-demographic details, questions regarding knowledge of antibiotics use, attitude of the public and practices towards the antibiotic's use

including Klang Valley residents who were ≥18 years and could speak English language. Prior to the distribution of questionnaire, participants were asked about their English language proficiency and understanding. Upon, meeting the all requirements, the questionnaire was distributed among the study participant's through email and social media. All collected data was analysed by SPSS software using version 27.0. Chi-square test was used to determine the association between socio-demographic variables and KAP whereas Spearman test was used to identify the correlation between KAP. **Results and Discussion:** A total of 408 participants were recruited and the study found that half of participants (53.4%) had a moderate level of KAP towards the antibiotic use. The results were also statistically significant within the residing area particularly due to higher educational levels that enhanced their KAP towards antibiotic use. **Conclusion:** This study provided us with baseline evidence about the KAP regarding antibiotic use among the general public in Malaysia. Hence, it will be useful in guiding further interventions to improve awareness about antibiotics use and enhance antimicrobial stewardship in our community.

## Abstract P10

### Medication Discharge Times at Hospital Pharmacy: To Take Home

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#### ABSTRACT

**Background & Objectives:** Efficient medication discharge is crucial for patient well-being and healthcare operations. This study was conducted at Regency Specialist Hospital, Johor, to determine medication discharge times, total time spent in pharmacy, and explore satisfaction with medication waiting times, aiming to enhance future pharmacy and related operations in line with forward-thinking pharmacy practices. **Method:** This observational study extracted data from Electronic Medical Record system and a satisfaction survey focused on medication waiting times. It was conducted among inpatients across all hospital wards from



1<sup>st</sup> November 2023, to 2<sup>nd</sup> December 2023. Logistic regression was used to estimate adjusted odds ratios and 95% confidence intervals for factors affecting the 90-minute target medication discharge time. **Result & Discussion:** Of the 247 inpatient participants, approximately 58% (n=142) were female, 75% (n=186) had insurance coverage, 38% (n=93) were prescribed four or more medicines, 82% (n=202) were in adult wards, and 66% (n=163) were of Chinese ethnicity. Most participants, approximately 85% (n=209), were satisfied with the medication waiting times at pharmacy counter, which met their expectations, with an average waiting time of 12.0 (sd=7.1) minutes. The mean medication discharge time, from screening upon prescription receipt to medication receipt stage, was 101.5 (sd=52.7) minutes, with approximately half (n=129) exceeding 90-minute target. Notably, only 12% of discharge time spent in pharmacy department, suggesting most of the discharge processing time took place outside of pharmacy department, particularly in payment-related processes involving nurses, doctors and charges incurred by patients. After adjusting for confounders, the 90-minute target medication discharge time was not associated with characteristics of patients or mode of payment. **Conclusion:** This study highlights that extended medicine discharge process time is influenced by factors beyond pharmacy operations, including administrative issues and patient-specific factors, warranting attention. To improve overall efficiency, innovative approaches are necessary to streamline transitions in the discharge process.

## Abstract P11

### Use of Biodegradable Face Masks And Its Effects Towards The Environment: A Systematic Review

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#### ABSTRACT

**Background and Objectives:** During the COVID-19 pandemic, the usage of face masks has surged, indirectly causing an increase in environmental pollution due to improper disposal. This review aimed to determine the feasibility of face mask filters from biodegradable materials with respect to filtration efficiency, air permeability and degradation ability. **Method:** The Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA)

statement were adapted in the review. Two databases, Scopus, and Web of Science were used. Original articles in English, between 2019 to 2022 were included in the search. The search term keywords were related to biodegradable, mask, “personal protective equipment”, degradation, filters and environment. The search terms used were [biodegradable AND (mask\* OR “personal protective equipment”)]. After retrieving an initial number of articles, further screenings were done to exclude articles that did not meet the inclusion criteria. **Results and Discussion:** 57 articles were initially retrieved that were then screened on the title, abstract and removing duplicates. A full-text screening was conducted, leaving 14 articles for the review. All 14 articles reviewed showed the biodegradable masks achieved filtration efficiency of at least 86% or higher for particle sizes ranging from 0.2µm up to 3.0µm. Seven of the articles had data regarding air permeability tests which showed a range of pressure drop, from 59Pa to 119Pa. Five of the articles contained data regarding the degradation ability which revealed the component materials were able to degrade completely within at least a month when exposed to the environment. **Conclusion:** Biodegradable face masks can filter out foreign particles well with the added benefit of being able to degrade within a month. Biodegradable face masks may replace non-biodegradable masks to reduce environmental burden.

## Abstract P12

### Evaluating Pharmacists’ Research Skills and Their Perception on Research Impact in Johor Government Healthcare Settings

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#### ABSTRACT

**Background and Objectives:** While advancement in pharmacy practice is recently needed, research has become a vital aspect of evidence-based pharmacy practice that will further improve overall healthcare outcomes. Exploring



additional factors affecting pharmacists' research skills and their impact can help foster a stronger research culture. This study aims to evaluate pharmacists' confidence and competence in research and their perception towards research impact. **Method:** A multicenter, cross-sectional survey was conducted among registered pharmacists working in government healthcare facilities across Johor, Malaysia, from December 2023 to January 2024. The cluster random sampling method was applied to minimise selection bias. A validated online questionnaire was used to evaluate their confidence and competence while their perception of research impact was gauged using a validated questionnaire based on the Payback Framework by Donovan & Hanney (2011). Both descriptive and inferential statistics were applied for data analysis. **Results and Discussion:** A total of 377 pharmacists participated in the study, with an average tenure of 9.3 years (SD: 5.1). The majority (82.5%) had previously been involved in research. A significant correlation was found between confidence and competence scores ( $p < 0.001$ ;  $r = 0.92$ ). Demographic characteristics, years of service, geographical location, and type of facilities did not affect competence levels. Higher competence levels were observed among those with postgraduate degrees, research interests and involvement in research mentorship programs ( $p < 0.05$ ). Pharmacists exhibited a moderate perception of research impact, with 55.6% recognising an increase in service quality, 48.5% noting individual satisfaction, and 51.1% acknowledging quality improvement awareness due to their research. Thematic analysis identified inadequate training, time constraints and lack of collaboration as major challenges hindering research engagement. **Conclusion:** Concerted efforts are needed to help pharmacists appreciate their research impact better and contribute more effectively to the advancement of pharmacy practice and patient care.

## Abstract P13

### Review on the Safety, Efficacy and Cost Effectiveness of Pharmacists-Led Deprescribing Program for Geriatric Patients

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#### ABSTRACT

**Background and Objective:** This review focuses on pharmacist-led deprescribing initiatives aimed at improving

medication management in the geriatric population. Through comprehensive searches of major databases, studies specifically addressing deprescribing in geriatric populations and led by pharmacists were identified. Both original research and review publications investigating the safety, effectiveness, and economic viability of pharmacist-led deprescribing were included. The objective of this review is to assess the impact of pharmacist-led deprescribing programs on medication management in the geriatric population and to evaluate their economic implications. **Method:** Studies were identified through thorough searches of major databases, with a specific focus on pharmacist-led interventions targeting deprescribing in geriatric populations. The inclusion criteria encompassed both primary research and review articles investigating the safety, effectiveness, and economic viability of pharmacist-led deprescribing. Relevant studies were analysed to assess the impact of pharmacist-led deprescribing initiatives on medication management and to evaluate their cost-effectiveness. **Results and Discussion:** The results indicate that pharmacist-led deprescribing initiatives are associated with significant cost savings and improvements in quality-adjusted life years (QALYs), particularly in the context of nonsteroidal anti-inflammatory drugs (NSAIDs) and sedative-hypnotics for geriatric patients. These interventions have been found to be both more effective and less expensive, making them a cost-efficient strategy for optimising medication management in the geriatric population. Overall, pharmacist-led deprescribing programs have demonstrated effectiveness in enhancing health outcomes, promoting medication adherence, and reducing healthcare costs for geriatric patients. **Conclusion:** In conclusion, pharmacist-led deprescribing initiatives represent a valuable approach to optimising medication management in the geriatric population. The findings of this review underscore the importance of pharmacist-led interventions in improving medication safety, efficacy, and cost-effectiveness for older adults. Moving forward, further research and implementation of pharmacist-led deprescribing programs are warranted to maximise their potential benefits for geriatric patients and healthcare systems alike.



## Abstract P14

### Comparison of four methods in computing area under the concentration-time curve (AUC<sub>24</sub>) of vancomycin versus integration approach (standard) in hemodynamically stable patients- A single-centered retrospective study

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#### ABSTRACT

**Background and Objectives:** The updated guidelines recommend two approaches to estimate the AUC<sub>24</sub> for patients receiving vancomycin; Bayesian-derived AUC<sub>24</sub> monitoring or the first-order pharmacokinetic analytic equations. Bayesian approach is complex and unfamiliar to most pharmacists or clinicians. Several methods were developed to estimate AUC<sub>24</sub> for vancomycin. However, which approach can produce a more accurate AUC<sub>24</sub> remained unanswered. The main objectives of this study were to identify the method that able to provide a more accurate values of AUC<sub>24</sub> and to explore the agreement of AUC<sub>24</sub> estimated by the investigated methods to the integration model (standard). **Method:** We conducted a retrospective analysis using the Electronic Hospital Information System from a tertiary hospital in Malaysia. Data pertaining to patients who received vancomycin treatment from 1st January 2021 to 31st of December 2022 were retrieved for analysis. **Results and Discussion:** The mean AUC<sub>24</sub> of Simpson's Rule integrated method (standard) versus 2-Point trapezoidal, 3-Point trapezoidal, Pharmacokinetic Method 1 (PK1) and Pharmacokinetic Method 2 (PK2) showed a statistically significant difference by  $91.05 \pm 40.88$  mg·h/L,  $116.95 \pm 33.71$  mg·h/L,  $119.60 \pm 40.91$  mg·h/L and  $38.73 \pm 59.56$  mg·h/L respectively,  $p < 0.05$ . None of the methods agree with the Simpson's Rule integrated method. The 2-Points, 3-Points, PK1 and PK2 methods also appeared to have some imprecision versus the Simpson's Rule Integration method, as 40%, 67.5%, 65 % and 12.5% of AUC<sub>24</sub> estimates were outside the upper and lower agreement level of  $\pm 100$  mg·h/L, respectively. **Conclusion:** The present study failed to demonstrate agreement of calculated AUC<sub>24</sub> by the four methods to the

Simpson integration approach (standard). All the approaches underestimated the AUC<sub>24</sub>. Among the four methods, there is a modest variance of 38.73 mg·h/L in the PK2 values, which aligns most closely with the accuracy of Simpson's rule integration.

## Abstract P15

### Can We Balance the Scale - Understanding the Landscape of Medicine Shortages and Surpluses Across Healthcare Facilities in Malaysia

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#### ABSTRACT

**Background and Objective:** Medicine surpluses and shortages are critical global concerns and have been identified as a national priority. They can occur at various levels of the supply chain. Addressing these issues within and across healthcare facilities is a promising avenue. The full scope of these challenges within our healthcare facilities is still unknown. The aim of this study was to understand the current landscape of medicine wastage and shortages across healthcare facilities in Malaysia, with a focus of identifying strategies to address both issues holistically. **Methods:** A cross-sectional online survey was conducted among registered pharmacists working across healthcare facilities in both public and private sectors in Malaysia. The questionnaire was adopted from the validated European Association of Hospital Pharmacists (EAHP) Medicines Shortages Surveys, and consisted of: (I) respondent demographics; (II) medicine shortages; (III) medicine surpluses; and (IV) potential solutions. **Results and Discussion:** The study received 112 responses between January to May 2023. Most respondents (89.3%) had less than 10 years of experience as pharmacists, with 41.1% practicing in community pharmacies. A significant proportion (83%) reported experiencing medicine shortages, predominantly in community pharmacies (30.4%) and public hospitals (29.5%). Surpluses were reported by 42.4% of respondents, primarily in community pharmacies (14.1%) and public hospitals (12.9%). Pharmacists agreed that Malaysia should implement a medicine shortage notification system similar to the USFDA (95%). Medicine redistribution was widely employed during both shortages



(16%) and surpluses (45%). However, redistribution usually occurred within the establishment chain (e.g. KKM). While it is a viable short term effort, it can be tedious and often not fruitful (46%). **Conclusion:** Medicine shortages and surpluses co-occur at varying degrees in healthcare facilities across Malaysia. Pharmacists have employed multiple approaches, yet in silos, emphasizing the urgent need for a unified strategy involving both public and private sectors to address these challenges holistically.

## Abstract P16

### Understanding The Contributing Factors and Impact of Burnout on Malaysian Pharmacists in Their Respective Healthcare Organisations (Government and Private): A Study Protocol

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#### ABSTRACT

**Background and Objectives:** Globally, one in every two pharmacists experiences burnout. Burnout among pharmacists significantly affects healthcare delivery and organisational efficiency. The phenomenon of burnout has been relatively well studied in physicians and nurses, but not pharmacists. This study aims to identify the factors contributing to burnout and the resources that can mitigate it among Malaysian pharmacists using the Job Demand-Resource (JD-R) model, and to assess its impact on productivity and economic burden in healthcare organisations. **Method:** This multi-phase research will involve patient-facing pharmacists across Malaysia from both the government and private sectors. Study 1 will involve semi-structured, 1-to-1 interviews with 120 pharmacists to explore factors contributing to burnout and strategies for mitigation. Study 2 will assess the prevalence of burnout, its contributing factors, and mitigating resources among different groups of pharmacists through a cross-sectional survey involving a nationally representative sample of 2,400 pharmacists. The study will apply the JD-R model to develop a burnout framework for Malaysian pharmacists utilising a structural equation model (SEM). Study 3 will develop an economic model to quantify the direct, indirect, and turnover costs of burnout of pharmacists

in Malaysia. **Results and Discussion:** The qualitative interviews will provide a preliminary understanding of burnout in pharmacists, including the similarities and differences of burnout factors and resources across different pharmacy sectors. The cross-sectional survey will complement the qualitative findings with a larger and nationally represented sample, validating the burnout factors and resources identified through the JD-R burnout framework. Study 3 will reveal the economic impact of burnout, including healthcare expenses, reduced productivity, and turnover costs. **Conclusion:** This research will produce valuable insights and a theoretical model affecting pharmacists' mental health in Malaysia. The findings will inform strategies to improve mental health and work environments, enhancing healthcare delivery and reducing the economic burden of burnout.