

pulse@UM

A RESEARCH BULLETIN BY THE FACULTY OF MEDICINE, UNIVERSITI MALAYA

UNIVERSITI
MALAYA

NURTURING THE NATION: BUILDING A BREASTFEEDING FRIENDLY MALAYSIA

“Breastfeeding is not just nutrition: it's connection, protection, and empowerment for both mother and child.”

- Page 6-7

- 
- Orang Asli (Indigenous) Health: Tackling Communicable and Non-Communicable Diseases
 - Model-informed precision dosing (MIPD) of antibiotics
 - Breaking the Myths: Understanding and Preventing Suicide
 - Prioritizing Welfare in Laboratory Animal Research
 - CUSP Journey: Building a Safer, Sustainable Future in Healthcare
 - Expanding HIV Prevention through Private Community Pharmacies: Findings from Malaysia's First Pharmacy-based PrEP Pilot Study

TABLE OF CONTENTS

PULSE@UM ISSUE 3/2025

06 COVER STORIES

- Nurturing the Nation: Building a Breastfeeding-Friendly Malaysia
- Orang Asli (Indigenous) Health: Tackling Communicable and Non-Communicable Diseases
- CUSP Journey: Building a Safer, Sustainable Future in Healthcare
- Model-informed precision dosing (MIPD) of antibiotics
- Expanding HIV Prevention through Private Community Pharmacies: Findings from Malaysia's First Pharmacy-based PrEP Pilot Study
- Breaking the Myths: Understanding and Preventing Suicide
- Prioritizing Welfare in Laboratory Animal Research

04 FOREWORD FROM THE DEPUTY DEAN OF RESEARCH

05 EDITORIAL BOARD

20 SPECIAL HIGHLIGHT

- A Community Project Addressing the High Incidence of Leprosy among the Penan in Upper Baram, Sarawak
- Every Bite Counts: Tackling Food Waste to Combat Climate Change

24 ACHIEVEMENTS

Foreword from the Deputy Dean of Research

It is my great pleasure to introduce the third and final issue of the PULSE Bulletin for 2025. The collection of articles presented here reflects the depth, diversity, and societal relevance of our research endeavours, emphasising our faculty's heartfelt commitment to advancing knowledge that improves lives, informs policy, and strengthens health systems.

The articles, centred upon the theme of International Health Day celebration, illuminate the lived realities of populations who are often under-represented in mainstream discourse. The **International Breastfeeding Month** features the inspiring journeys of breastfeeding mothers who are forced to tackle difficulties like managing cultural expectations and endure workplace constraints. This meaningful work reinforces Malaysia's ongoing efforts to create a breastfeeding-friendly environment that supports mothers.

Continuing this focus on equity and context, two articles aligned with **World Indigenous Peoples' Day** highlight research conducted hand-in-hand with Indigenous communities. These valuable contributions demonstrate how respectful, long-term engagement can address communicable and non-communicable diseases while advancing health equity. Importantly, they remind us that meaningful research with Indigenous communities must be grounded in trust, co-creation, and sustained collaboration.

From community settings, the focus then shifts to healthcare systems and clinical practice. Two articles, on the Comprehensive Unit-Based Safety Program (CUSP) and model-informed precision dosing of antibiotics illustrate how rigorous research can be translated into tangible improvements in patient safety, treatment effectiveness, and service delivery. Both write-ups aligned with **World Patient Safety Day** and **World Antimicrobial Awareness Week**, respectively reflect our faculty's aspiration to move beyond generating evidence towards embedding evidence into everyday practice.

The edition continues by drawing readers to Malaysia's first pharmacy-based HIV pre-exposure prophylaxis (PrEP) pilot study, a truly groundbreaking initiative demonstrating how decentralised, client-friendly delivery through pharmacies can overcome barriers such as stigma, limited access, and long waiting times. Featured in conjunction with **World AIDS Day**, the article illustrates how HIV prevention can be brought closer to communities through innovative and inclusive service models.

Building on this emphasis on reducing stigma and improving access to care, mental health and well-being emerge as another key topic, highlighted alongside with **World Suicide Prevention Day**. By addressing socially ingrained beliefs surrounding suicide and advocating for empathy, openness, and early intervention, our researchers contribute to efforts to reduce stigma and promote psychological safety within communities and institutions alike.

Underlying all these efforts is a strong commitment to ethical responsibility in research, further underscored by contributions aligned with **World Animal Welfare Day**. By emphasising ethical, and legally compliant practices in laboratory animal research, this article reminds us that scientific progress must be accompanied by compassion, vigilance, and public accountability.

That is not all, you should not miss the Zero Waste Campus initiative featured as special highlight of the bulletin. It demonstrates how institutional action can make a real difference through food segregation, composting, and sustainable practices. These inspiring efforts show that mindful consumption and small behavioural changes can collectively protect the planet, strengthen food systems, and support healthier lives.

As a whole, articles in this bulletin gives us a rich collection of research work and experiences that reflect interdisciplinarity, collaboration, and real-world impact. They showcase partnerships that span disciplines, institutions, and borders, while remaining firmly rooted in the Malaysian context. The balance between local relevance and global significance is a hallmark of research excellence at Universiti Malaya.

I warmly congratulate all authors for their dedication and invaluable contributions, and I trust that readers will find this bulletin both informative and inspiring. As we welcome the new year, may it bring renewed energy, deeper collaboration, and bold ideas as we continue to nurture research that serves humanity with integrity, empathy, and purpose!

PROFESSOR DR. NORAN NAQIAH HAIRI
Deputy Dean (Research) Faculty of Medicine



Editorial Board

Editor-in-Chief

Catherine Thamarai Arumugam

Editors

Christine Shamala Selvaraj

Haslinda Lahuddin

Jaime Jacqueline Jayapalan

Kee Boon Pin

Mohamad Shafiq Azanan

Nur Afiqah Mohd Salleh

Puah Suat Moi

Designer

Mohamad Shafiq Azanan

About Pulse@UM

Pulse@UM is a tri-annual research bulletin in English published by the Faculty of Medicine at the Universiti Malaya(UM). The views and opinions expressed here are those of the author(s) and do not necessarily reflect those of UM, and the editorial board. Materials from the Bulletin may be reprinted with proper attribution.

If you would like to learn more about the information from this bulletin, or would like to contribute or subscribe to future issues, please get in touch with us at: editorialpulse@um.edu.my

For the online version of this bulletin, visit:
resfom.um.edu.my/pulse-um



CONTRIBUTORS

We would like to acknowledge and thank the following contributors to this issue:

Marina Jokim Robert

Tan Maw Pin

Yan Nee Gan

Howie Lim Sin How

Lee Yew Kong

Shireen Anne Nah

Yvonne Lim Ai Lian

Mohd Idzwan Zakaria

Raja Iskandar Shah Raja Azwa

Ahmad Hatim Sulaiman

Lim Hooi Min

Nurul Farhana Ruslan

Karthikayini Krishnasamy

Nusaibah Abdul Rahim

Rafdzah Ahmad Zaki

Nur Azmina Mohd Zailan

Ng Wei Leik

Nimala Baskaran

Nurturing the Nation:

Building a Breastfeeding-Friendly Malaysia



Marina Jokim Robert

Department of Nursing Science

<https://umexpert.um.edu.my/marinarobert>

The Malaysian Landscape

Breastfeeding is universally recognized as the gold standard for infant nutrition, providing lifelong physical and emotional benefits for both mother and child. In Malaysia, however, achieving consistent and exclusive breastfeeding remains a complex challenge, shaped by cultural beliefs, workplace constraints, and the availability of systemic support. Despite extensive health campaigns and educational initiatives, many Malaysian mothers continue to face barriers that hinder the full practice of exclusive breastfeeding (1).

Nevertheless, recent data indicate notable progress. Among children born in the past 24 months, 64.3% were breastfed within the first hour after birth, reflecting improvements in early initiation practices. Furthermore, 50.6% of children aged 12–23 months continued to be breastfed, demonstrating sustained breastfeeding beyond infancy (2). While these figures highlight positive national trends, they also underscore the ongoing challenges that affect the duration and quality of breastfeeding practices among Malaysian mothers.



What Shapes Breastfeeding Decisions

A mother's decision to breastfeed exclusively is rarely made in isolation. Educational level, employment status, access to information, and family support all play pivotal roles. Studies show that encouragement from spouses and family members greatly influences a mother's ability to sustain breastfeeding, as does having a supportive workplace with facilities for expressing and storing milk (3).

Cultural traditions add another layer of complexity. Among Chinese mothers, for example, postpartum confinement practices can either promote or hinder breastfeeding depending on the advice given during recovery (4). In some communities, elders may encourage pre-lacteal feeding or early introduction of cereal, often believing that mothers have insufficient milk or that babies need extra sustenance in the tropical climate (5). Although well-intentioned, these customs may inadvertently disrupt exclusive breastfeeding.

Healthcare professionals play a vital role in navigating this cultural landscape. Rather than dismissing traditional practices, they can approach them with sensitivity providing gentle, evidence-based education that respects heritage while emphasizing the proven benefits of breastfeeding.

Government Commitment and Social Change

Malaysia has long demonstrated its commitment to promoting breastfeeding through initiatives such as the Baby-Friendly Hospital Initiative (BFHI), launched in 1993. This program encourages early initiation and rooming-in practices across hospitals. In recent years, attention has expanded to include breastfeeding-friendly workplaces and community peer programs that counter infant formula marketing.

Still, returning to work remains a major hurdle. Short maternity leave, limited lactation spaces, and rigid schedules often lead to early breastfeeding cessation. Some organizations have made progress by offering dedicated lactation rooms and flexible hours, but these remain the exception rather than the norm.

Social attitudes also influence outcomes. Many mothers still feel uncomfortable breastfeeding in public due to stigma or disapproval. Creating breastfeeding-friendly public spaces such as malls, offices, and transportation hubs would help normalize the practice and empower mothers.

Towards a Breastfeeding-Friendly Malaysia

Achieving sustained breastfeeding success requires a united effort. Policy reforms, workplace flexibility, family involvement, and community support must go hand in hand. Healthcare professionals are at the heart of this transformation, guiding mothers with empathy, knowledge, and respect.

Ultimately, a breastfeeding-friendly Malaysia will grow not just from policies but from a shared understanding, where mothers are supported, traditions are respected, and every child receives the healthiest possible start in life ■

References:

1. Shohaimi, N. M., Mazelan, M., Ramanathan, K., Hazizi, M. S. M., Leong, Y. N., Cheong, X. B., Ambigapathy, S., & Cheong, A. T. (2022). Intention and practice on breastfeeding among pregnant mothers in Malaysia and factors associated with practice of exclusive breastfeeding: A cohort study. *PLoS ONE*, 17(1). <https://doi.org/10.1371/journal.pone.0262401>
2. Mohd Zaki, N. A., Amali, K. H., Abd Ghaffar, S., & Zainuddin, A. A. (2023). Breastfeeding situation in Malaysia: Findings of National Health and Morbidity Survey 2022 (NHMS): Maternal and child health. Institute for Public Health, National Institutes of Health, Ministry of Health Malaysia. <https://iku.nih.gov.my/images/poster2023/60.pdf>
3. Ahmad, R. S., Sulaiman, Z., Hussain, N. H. N., & Norhayati, M. N. (2022). Working mothers' breastfeeding experience: A phenomenology qualitative approach. *BMC Pregnancy and Childbirth*, 22(1). <https://doi.org/10.1186/s12884-021-04304-4>
4. Foong, S. C., Tan, M. L., Foong, W. C., Ho, J. J., & Rahim, F. F. (2021). Comparing breastfeeding experiences between mothers spending the traditional Chinese confinement period in a confinement centre and those staying at home: A cohort study. *International Breastfeeding Journal*, 16(1). <https://doi.org/10.1186/s13006-020-00353-1>
5. O'Connell, M., Meedya, S., Baqali, J. A., Alraeesi, K., & Leahy-Warren, P. (2024). A systematic review and meta-analysis of breastfeeding rates and practices in the United Arab Emirates (UAE). *Research Square*. <https://doi.org/10.21203/rs.3.rs-5245373/v1>

Orang Asli (Indigenous) Health: Tackling Communicable and Non-Communicable Diseases



Yvonne Lim Ai Lian

Department of Parasitology
<https://umexpert.um.edu.my/limailian>

Our health research journey with the Orang Asli (OA) community began more than two decades ago. In our quest to unravel science in this community, the experiences have been challenging, stimulating, rewarding and humbling at the same time. Built on trust, mutual respect, and a shared commitment to Indigenous health, we journeyed with the community by listening, learning and growing together.

An initial research pursuit that sought to understand communicable diseases such as helminth (worm) infections in the OA community, subsequently expanded to exploring how deworming treatments shaped the gut microbiome. Together with researchers from New York University and the National Institutes of Health, USA, we unfolded the mechanisms of how helminth infection promotes the growth of beneficial gut microbiota [1].

As trust deepened, our research team started co-designing research questions together, especially around chronic skin infections

which were plaguing certain villages. Through partnerships with local universities (ie., UPM, UiTM) and the National Institutes of Health, USA, extensive sampling and laboratory analysis were conducted, and results confirmed the causative agent as *Trichophyton concentricum*. Our team was the first group globally to characterize its genome and report on the existence of antifungal resistance even in remote villages [2]. These findings provide valuable insights into the clinical, microbiological, and genomic features of chronic fungal skin infections, offering the potential to develop strategies to address drug resistance and improve effective therapy.

In addition, by characterizing the microbiome of interior OA populations, this study adds valuable context to our understanding of skin microbial diversity and how it might be shaped by urbanization. The extensive microbiome profiling from these populations enabled us to construct Malaysia and ASEAN's first skin microbiome database, which includes 433 previously undescribed bacterial

species. This unique resource not only deepens our understanding of indigenous skin health and microbial ecology but also provides a critical foundation for future clinical, epidemiological, and therapeutic research.

Our long-term collaboration with Hospital Orang Asli Gombak (HOAG) and the Department of Orang Asli Development (JAKOA) played a vital role in translating these research data into actionable plans, ensuring sustainable treatment and improved healthcare delivery.

In recent years, together with anthropologists, biologists, ecologists, epidemiologists, and Indigenous collaborators from Universiti Malaya, North American universities, HOAG, the Center for Orang Asli Concerns (COAC) and the Centre for Malaysian Indigenous Studies (CMIS), UM, we launched the Orang Asli Health and Lifeways Project (OA HeLP), an interdisciplinary initiative examining how urbanization and market integration are reshaping OA lives, especially from the perspective of non-communicable diseases.

By blending ethnographic insights with biomedical data, we explore nutrition, infectious and chronic diseases such as osteoarthritis [3] among those who were once



Figure 2. Skin sample collection and interview session with an OA mother and child

hunter-gatherers and small-scale farmers. The OA community now faces shifts in diet, movement, housing, and access to ancestral knowledge due to urbanization.

At its heart, OA HeLP is about partnership. Fieldwork is co-created with OA leaders, weaving Indigenous wisdom into every layer of research. This approach enriches science and empowers communities to shape their futures and advocate for their health and heritage.

The recently concluded “*Bicaraq Kesihatan dan Kesejahteraan Orang Asli*” conference, held on 10–11 October 2025, stands as a meaningful milestone in our sustained collaboration with the OA community, where OA leaders, researchers, and health professionals gathered to address pressing health challenges. This conference amplified OA voices and helped bridge traditional and mainstream medicine, paving the way for equitable, culturally grounded solutions ■

References:

1. Deepshika Ramanan, Rowann Bowcutt, Soo Ching Lee, Mei San Tang, Zachary D. Kurtz, Kenya Honda, William C. Gause, Martin J. Blaser, Richard A. Bonneau, Yvonne AL Lim, P'ng Loke, and Ken Cadwell. Helminth infection promotes colonization resistance via type 2 immunity. *Science* 2016, 352(6285): 608-612.
2. Yi Xian Er, Soo Ching Lee, Chioma Aneke, Sean Conlan, Azdayanti Muslim, Clay Deming, You Che, Nan Jiun Yap, Mian Zi Tee, Nurmanisha Abdull-Majid, Shezryna Shahrizal, Leong Kin Fon, Jungmin Han, Zeyang Shen, Leslie Thian Lung Than, Morgan Park, Izandis Mohd Sayed, NISC Comparative Sequencing Program, Amir Seyedmousavi, Heidi H Kong, P'ng Loke, Julia A Segre, Yvonne Ai Lian Lim. *Trichophyton concentricum* fungal infections and the skin microbiomes in Indigenous Peninsular Malaysians (Orang Asli). *Cell* 2025, 188 (16): 4257-4274.e13. <https://doi.org/10.1016/j.cell.2025.05.034>.
3. Ian J. Wallace, David T. Felson, Virginia B. Kraus, Tuhina Neogi, Ida K. Haugen, Janet L. Huebner, Cecilia M. T. Sena, Steven Worthington, Yvonne A. L. Lim, Vivek V. Venkataraman, Thomas S. Kraft, Amanda J. Lea. Dampened inflammation and reduced risk of osteoarthritis among non-industrialized societies. *Osteoarthritis and Cartilage* 2025 (Accepted).



Figure 1. *Tinea imbricata* among the villagers.

CUSP JOURNEY: BUILDING A SAFER, SUSTAINABLE FUTURE IN HEALTHCARE



Karthikayini Krishnasamy

Department of Nursing

<https://umexpert.um.edu.my/karthika>



Tan Maw Pin

Department of Medicine

<https://umexpert.um.edu.my/mawpin>



Mohd Idzwan Zakaria

*Department of Emergency
Medicine*

<https://umexpert.um.edu.my/idzwan>



When I first embarked on my journey to study patient safety, one question kept coming back to me: “Are our hospitals truly safe for patients?” This question became the foundation of my research on the **Comprehensive Unit-Based Safety Program (CUSP)**, a structured approach developed by John Hopkins that empowers healthcare staff to learn from mistakes, improve teamwork, and ultimately prevent patient harm.

Understanding Safety Culture

The journey began by exploring how different groups of healthcare professionals; doctors, nurses, allied health staff perceive patient safety culture. Using the Safety Attitudes Questionnaire (SAQ), we discovered that perceptions varied widely between professions. This was eye-opening: safety culture was not uniform, and each group faced unique challenges.

Impact of the COVID-19 Pandemic

The COVID-19 pandemic added another layer to the study. Healthcare workers were under immense stress, yet many showed resilience and even stronger commitment to patient safety. Those redeployed to different units reported higher teamwork and job satisfaction, reminding us that crisis situations can also foster unity and innovation in practice.

Implementing CUSP to Prevent Falls

The heart of this study was implementing CUSP in a haematology ward to prevent inpatient falls. We trained staff in the “science of safety,” partnered with hospital executives, and created a blame-free environment where errors could be openly discussed. Over time, teamwork improved, communication strengthened, and safety hazards were systematically addressed.



Science of Safety training

Educates staff on the **science of improving patient safety**, focusing on systems thinking and design.



Partnership for the Goals

Partners with a senior executive to help **bridge the gap between the management and the frontline staff**



Implementation Science

Implements **teamwork** and communication tools.

"No one should be harmed while receiving health care. And yet globally, at least five patients die every minute because of unsafe care. We need a patient safety culture that promotes partnership with patients, encourages reporting and learning from errors, and creates a blame-free environment where health workers are empowered and trained to reduce errors."

Dr Tedros Adhanom Ghebreyesus, WHO Director-General

Figure 1. Process of CUSP.

The results were remarkable: the fall rate dropped from 11.18 per 1,000 bed days in 2018 to zero after CUSP was introduced. In fact, the ward celebrated 365 consecutive fall-free days in 2020; a milestone that reflected not just improved systems, but also the dedication of frontline staff.

Reflections and Future Directions

For me, the CUSP journey was more than just numbers and outcomes. It was about transforming mindsets, helping staff feel safe to speak up, shifting away from blame, and making patient safety everyone's responsibility.

Moving forward, sustaining these gains is key. Expanding CUSP beyond a single ward into a hospital-wide or even national initiative could bring lasting improvements in patient safety, particularly in high-risk areas like critical care, operating theatres, and emergency departments.

The CUSP journey showed that when staff, leaders, and systems align under a shared vision of "patient safety first," extraordinary results are possible. It has become not just a project, but a way of working that continues to inspire my passion for safer healthcare ■

Model-informed precision dosing (MIPD) of antibiotics



Nusaibah Abdul Rahim

Faculty of Pharmacy

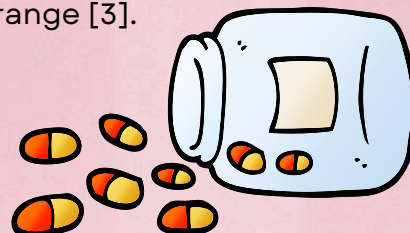
<https://umexpert.um.edu.my/nusaibah-abdulrahim>

Treatment response among individuals can differ for certain drugs due to variations in genotype and phenotype. To achieve optimal therapeutic outcomes, some drugs with specific characteristics benefit from close monitoring and precision dosing, whereby doses are tailored to individual patients. Such drugs often have a narrow therapeutic index, where doses that are too high may cause serious adverse effects while doses that are too low may result in poor therapeutic outcomes [1].

Pharmacokinetics refers to the study of how drug concentrations change within the body over time as a result of physiological processes. Population pharmacokinetic (popPK) modelling can be applied to identify significant covariates contributing to response variability and to guide dose optimisation. When Bayesian popPK modelling is used to refine dosing, the approach is known as model-informed precision dosing (MIPD) [2]. Since pharmacokinetic/ pharmacodynamic (PK/PD) principles are applied, MIPD can be implemented when plasma drug concentrations reliably predict pharmacological effects [3].

Antibiotics with a narrow therapeutic window require close monitoring through a service known as Therapeutic Drug Monitoring (TDM), which is offered in hospitals worldwide, including Malaysia. TDM has been available in Malaysia since the 1980s [4], and approximately 70% of Malaysian hospitals provide this service.

TDM involves interpreting plasma drug concentration levels relative to the therapeutic range, upon which dose adjustment recommendations are made to optimise treatment outcomes. Common antibiotics subjected to TDM include vancomycin and aminoglycosides (amikacin and gentamicin). Inadequate dosing may cause treatment failure and promote antimicrobial resistance (AMR), a major global health concern. Conversely, excessive exposure reflected by plasma concentrations above recommended therapeutic ranges for agents such as vancomycin, amikacin, and gentamicin can lead to nephrotoxicity. Nonetheless, some patients may still experience toxicity even when plasma levels fall within the therapeutic range [3].



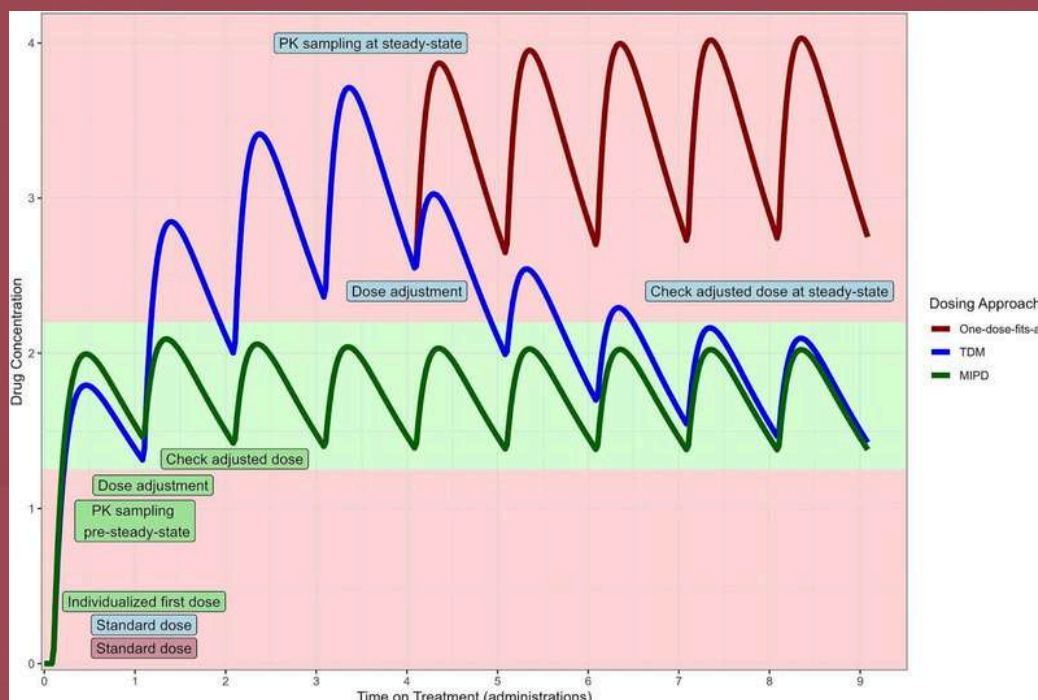


Figure 1. Impact of performing model-informed precision dosing (green) compared to TDM (blue) and the “one-dose-fits all” (red) approach. The light green area represents the therapeutic window. Figure from Agema et al. [5].

While TDM supports individualised therapy, it has limited capacity to achieve true precision dosing. The conventional TDM approach presents several shortcomings, often resulting in suboptimal attainment of PK/PD targets. Model-informed precision dosing (MIPD) provides a mathematical framework that integrates multiple data sources to enhance the TDM process and improve the success of antibacterial therapy. The impact of MIPD is illustrated in Figure 1.

To achieve precise dosing, many additional factors and parameters must be considered. This is where PK/PD models play a critical role, as they provide information on drug exposure and its relationship to efficacy or toxicity. Moreover, incorporating PK/PD models through a Bayesian approach can be applied within the MIPD framework. The attainment of PK/PD targets is quicker with MIPD as sampling at steady state is not required.

A review by Kantasiripitak et al. [6] reported that approximately ten MIPD software tools are currently available, reflecting the growing demand for such platforms. However, only four tools demonstrated

performance exceeding 75%, based on evaluation criteria such as user-friendliness and usability, user support, computational features, population models, quality and validation, output generation, privacy, data security, and cost [6].

Many popPK models and hence MIPD tools, have been developed based on data from non-Asian patients. Recently, MIPD has also been implemented in Japan, Korea, China, and Vietnam. Future directions for MIPD include integrating artificial intelligence (AI) and machine learning (ML) [7], as well as incorporating biomarkers to further enhance dosing precision. Ultimately, moving away from the “one dose fits all” concept, MIPD tools should continue evolving with a greater emphasis on Asian patient populations, enabling clinicians to individualise therapy and optimise health outcomes ■

1. Peck, R. W. (2021). Precision dosing: An industry perspective. *Clinical Pharmacology & Therapeutics*, 109(1), 47–50. <https://doi.org/10.1002/cpt.2064>
2. Abdulla, A., Edwina, A. E., Flint, R. B., Allegaert, K., Wildschut, E. D., Koch, B. C. P., & de Hoog, M. (2021). Model-informed precision dosing of antibiotics in pediatric patients: A narrative review. *Frontiers in Pediatrics*, 9, 624639. <https://doi.org/10.3389/fped.2021.624639>
3. Yow, H. Y., Govindaraju, K., Lim, A. H., & Abdul Rahim, N. (2022). Optimizing antimicrobial therapy by integrating multi-omics with pharmacokinetic/pharmacodynamic models and precision dosing. *Frontiers in Pharmacology*, 13, 915355. <https://doi.org/10.3389/fphar.2022.915355>
4. Ab Rahman, A. F., Abdelrahim, H. E. A., & Mohamed Ibrahim, M. I. (2013). A survey of therapeutic drug monitoring services in Malaysia. *Saudi Pharmaceutical Journal*, 21(1), 19–24. <https://doi.org/10.1016/j.jsps.2012.01.002>
5. Agema, B. C., Koch, B. C. P., & Mathijssen, R. H. J. (2025). From prospective evaluation to practice: Model-informed dose optimization in oncology. *Drugs*, 85, 487–503. <https://doi.org/10.1007/s40265-025-02152-6>
6. Kantasiripitak, W., Van Daele, R., Gijzen, M., Ferrante, M., Spriet, I., & Dreesen, E. (2020). Software tools for model-informed precision dosing: How well do they satisfy the needs? *Frontiers in Pharmacology*, 11, 620. <https://doi.org/10.3389/fphar.2020.00620>
7. Poweleit, E. A., Virks, A. A., & Mizuno, T. (2023). Artificial intelligence and machine learning approaches to facilitate therapeutic drug management and model-informed precision dosing. *Therapeutic Drug Monitoring*, 45(2), 143–150. <https://doi.org/10.1097/FTD.0000000000001078>

Expanding HIV Prevention through Private Community Pharmacies: Findings from Malaysia's First Pharmacy-based PrEP Pilot Study



Yan Nee Gan

Department of Social and Preventive Medicine



Raja Iskandar Shah Raja Azwa

Department of Medicine
<https://umexpert.um.edu.my/iskandar-azwa>



Rafdzah Ahmad Zaki

Department of Social and Preventive Medicine
<https://umexpert.um.edu.my/drrafdzah>



Howie Lim Sin How

Department of Social and Preventive Medicine
<https://umexpert.um.edu.my/howie-lim>

Although oral HIV pre-exposure prophylaxis (PrEP) for HIV prevention has been available in Malaysia since 2018, PrEP uptake remains low, with only about 9,000 users in 2025.¹ There are an estimated 354,000 people in key populations, many of whom could benefit from PrEP.² Yet, many still face barriers such as stigma, long waiting times, limited clinic hours, and privacy concerns. Findings from the first MyPrEP implementation project showed that some individuals prefer getting PrEP from pharmacies. Being widely accessible, with more than 3,000 pharmacies nationwide, and often serving as the first point of contact for

health advice, pharmacies are well-positioned to provide PrEP services.³ In response, our research team piloted Malaysia's first pharmacy-based PrEP service to examine its feasibility and effectiveness in real-world settings.

Each pharmacy had a private consultation room and nearby partnering PrEP clinics for seamless referrals. Participants booked appointments online and, upon arriving at the pharmacy, were assessed by trained pharmacists using a digital checklist, assisted with oral-fluid HIV self-testing, and provided with personalised counselling. If eligible for PrEP, pharmacists obtained electronic prescriptions from doctors via telemedicine, allowing participants to start PrEP on the same day. Pharmacists dispensed PrEP at a subsidised price and scheduled follow-up visits for the participants who were followed up for seven months.

The majority of individuals who attended the pharmacies were gay or bisexual men, about one-third reported condomless sex in the past three months, more than half were first-time PrEP users, and two-thirds preferred the event-driven dosing method. Within the implementation science framework, we assessed whether this model showed

promise. As such, we evaluated six implementation outcomes, including uptake, acceptability, appropriateness, feasibility, fidelity (delivery as intended), and sustainability.

This pilot study demonstrated the potential of pharmacies to expand PrEP access in Malaysia. They provide a convenient, private, and client-friendly option that complements existing clinic services. With strong satisfaction and high uptake, pharmacy-based PrEP could help close important gaps in HIV prevention by offering an additional option for individuals who may find it more accessible and less stigmatising. Furthermore, the pilot illustrates how decentralised PrEP delivery can reduce burden on overstretched public health facilities and support differentiated service delivery models. These insights offer valuable guidance for scaling up PrEP into everyday healthcare touchpoints at the national level and integrating it into broader HIV prevention strategies■

References:

1. Lim, S. H., Mburu, G., Boume, A., Pang, J., Wickersham, J. A., Wei, C. K. T., ... & Azwa, I. (2017). Willingness to use pre-exposure prophylaxis for HIV prevention among men who have sex with men in Malaysia: Findings from an online survey. *PloS one*, 12(9), e0182838.
2. Ministry of Health Malaysia. (2020). *Global AIDS Monitoring 2020: Malaysia HIV/AIDS Progress Report*.
3. Tew, M. M., Hatah, E., Arif, F., Abdul Wahid, M. A., Makmor-Bakry, M., & Abdul Maulad, K. N. (2021). Geospatial analysis of distribution of community pharmacies and other health care facilities providing minor ailments services in Malaysia. *Journal of pharmaceutical policy and practice*, 14(1), 24.



BREAKING THE MYTHS: UNDERSTANDING AND PREVENTING SUICIDE



Ahmad Hatim Sulaiman

Department of Psychological Medicine

<https://umexpert.um.edu.my/hatim>

Every life lost to suicide is a tragedy that affects not only the individual but also families and communities. Each year, millions of people around the world struggle with thoughts of ending their lives, yet many of them never receive the help they need. Despite increasing awareness and discussion about mental health, many misconceptions about suicide still persist. These myths can hinder prevention efforts, discourage people from seeking help, and contribute to stigma surrounding those who are struggling. Understanding the truth about suicide is essential to promoting early intervention and effective prevention.

One common misconception is that **people who talk about suicide are only seeking attention** and will not actually attempt it. In reality, most individuals who consider suicide often give warning signs through their words or actions. Talking about death, expressing hopelessness, or withdrawing from social contact are all potential indicators of suicidal thoughts. These signals should never be dismissed or taken lightly. Instead of ignoring or shaming such expressions, it is crucial to respond with empathy, listen carefully, and guide the person toward professional help.

Another widespread myth is that **asking someone if they are suicidal will “plant the idea” in their mind**. Research consistently shows that this is untrue. Open and honest conversations about suicide can actually reduce anxiety and make individuals feel understood. Asking directly and calmly about suicidal thoughts can be a lifesaving act, as it encourages the person to share their feelings and seek help rather than keeping their pain hidden.

There is also a mistaken belief that **suicide happens without warning**. While some cases appear sudden, most individuals show behavioural, emotional, or verbal signs beforehand. These may include changes in

sleep, appetite, giving away possessions, reckless behavior, or statements of hopelessness. Recognizing these early warning signs allows us to intervene before a crisis occurs.

Another damaging misconception is that **people who attempt suicide are weak**. Suicide is not a character flaw or moral failing. It is often the result of intense psychological pain, depression, trauma, or feelings of being trapped. Viewing suicidal individuals as weak only deepens stigma and prevents them from seeking help. Compassion, understanding, and support are far more effective in helping someone recover than judgment or blame.

It is important to remember that **suicide is preventable**. Early identification and treatment of mental health conditions such as depression, anxiety, or substance abuse can greatly reduce risk. Providing access to mental health care, crisis helplines, and community support are key preventive measures. Simple acts like listening without judgment, checking in regularly, and encouraging professional help can make a difference.

Suicide prevention also involves reducing stigma around mental illness and promoting open dialogue in workplaces, schools, and families. Education about mental health and resilience can help communities recognize signs of distress and respond appropriately. Ultimately, understanding and addressing misconceptions about suicide are an essential step toward effective prevention. By replacing myths with facts, showing empathy, and fostering open conversations, we can create a society where individuals in distress feel safe to seek help and where suicide is not seen as the only way out ■

Prioritizing Welfare in Laboratory Animal Research



Nur Azmina Mohd Zailan

Animal Experimental Unit

<https://umexpert.um.edu.my/azminanur>

The advancement of scientific knowledge often relies on research involving laboratory animals. As we approach World Animal Welfare Day, it is crucial to highlight our collective responsibility to ensure these animals receive the highest standards of care. Prioritizing their welfare is not only an ethical imperative but also contributes to more reliable and reproducible scientific outcomes.

One key aspect of animal welfare is providing appropriate social housing. For species like mice, rats, and rabbits, which are naturally social, group housing whenever scientifically justifiable offers significant benefits. Social interaction reduces stress, promotes natural behaviours, and can improve physiological and psychological well-being. This approach fosters a more enriched environment, moving beyond simple containment towards genuine care. Further enhancing this environment through enrichment items such as tissue paper for nesting, PVC pipes for hiding and exploration, or timothy hay for foraging and gnawing further contributes to their physical and psychological well-being by allowing them to express natural behaviours.

Equally important is maintaining clean and hygienic living conditions. Regularly cleaned cages and fresh bedding are fundamental to preventing disease and ensuring comfort. Accumulation of waste can lead to ammonia build-up and pathogen growth, severely impacting animal health. A clean environment signifies respect for the animals and is a cornerstone of good animal husbandry practice.



Figure 1. Laboratory mice and rabbits housed in enriched, social settings, demonstrating the importance of social interaction, comfort, and species-specific enrichment for animal welfare.



Figure 2. Oral presentation by a participant from UPM conducted at Dewan Kuliah 1, FOM.



Figure 3. Participants viewing the poster presentations that were set up at Tj. Danaraj Library, FOM

Close and consistent monitoring of animals throughout a research project is indispensable. Researchers must be diligent in observing daily behaviour, appetite, hydration, and any signs of discomfort or illness. Early detection of health issues allows for prompt veterinary intervention, minimizing suffering. This proactive approach ensures that animal welfare is continuously assessed and addressed at every stage of research.

In Malaysia, the Animal Welfare Act 2015 provides a comprehensive legal framework governing the care and use of animals, including those in research settings. This Act emphasizes the "Five Freedoms" – freedom from hunger and thirst, freedom from discomfort, freedom from pain, injury, or disease, freedom to express normal behaviour, and freedom from fear and distress. Researchers are obligated to adhere to these principles, ensuring that all procedures are conducted with the utmost consideration for animal well-being and with approval from relevant institutional animal care and use committees (IACUCs).

By embracing social housing, maintaining pristine environments, diligently monitoring animal health, and strictly adhering to the Animal Welfare Act 2015, we uphold our commitment to ethical and responsible laboratory animal research. Our dedication to animal welfare not only honors the lives of these animals but also strengthens the integrity and impact of our scientific endeavours ■

A community project addressing the high incidence of leprosy among the Penan in Upper Baram, Sarawak



Lee Yew Kong

Department of Primary
Care Medicine

<https://umexpert.um.edu.my/leeyk>



Lim Hooi Min

Department of Primary
Care Medicine

<https://umexpert.um.edu.my/hmlim>



Ng Wei Leik

Department of Primary
Care Medicine

<https://umexpert.um.edu.my/wlwg>

I stood in disbelief at the stark juxtaposition of how technology could reach the farthest corners of Sarawak, but medicine could not. A patient with fingers crippled and disfigured from leprosy tapped away on a smartphone in one of the most rural parts of Sarawak, connected to the new state-wide SALURAN 4G network, which snakes through the jungles on red and white telecommunications towers rising from the dense canopy.

Where was this exactly? This was the Rural Service Centre building in Long Beruang, a small Penan village 350 kilometers from Miri. We flew in on a tiny plane that landed on what was said to be Malaysia's shortest runway (at least I was told) and then bounced around in a 4WD vehicle on gnarly ex-logging roads to get to Long Beruang. Four of us from a UM-funded project were here to conduct fieldwork from 15-16 May 2025.

What had brought us here? The topic of leprosy among the Penan was a passionate cause for Dr Maurice Utap, the head of Klinik Kesihatan Bandaraya Miri and the Miri Division Family Medicine Service. His clinical work had exposed him to leprosy among the Penan rural population (roughly half of all Sarawak's leprosy cases occur among this Indigenous group) [1], and he pursued his PhD project at Universiti Malaya (UM) on this issue. A grant from the UM Ungku Aziz Centre for Development Studies [2] enabled a multidisciplinary team to develop Penan-language leprosy posters (Figure 1) and conduct an awareness campaign in the villages. By sheer coincidence, the dates we had chosen to travel to the villages to



Figure 1. Penan language posters: Symptoms of Leprosy



Figure 2 & 3. Checking for signs of leprosy at Long Lamai, and screening for blood pressure and blood sugar at Long Beruang

distribute the posters overlapped with a Sarawak state government community development programme held at Long Beruang.

Over two days, in front of a large crowd of villagers from the surrounding villages (Long Sait and Long Lamai) who made their way to Long Beruang, we delivered a leprosy awareness talk, distributed about 200 posters, and conducted basic health screenings (Figures 2, 3 and 4). The team detected multiple undiagnosed cases of high blood pressure and high blood glucose, and two new suspected cases of leprosy.

A single campaign is not enough to solve this complex issue. But there was another fortunate, serendipitous coincidence. Benard Upieh, a Penan government officer working at the Economic Planning Unit Sarawak, had been helping us translate the posters; he was also one of the organisers of the rural development programme, and so we all met face-to-face in this tiny village in the rainforest. In conversation, Maurice and Benard realised they each had access to important, yet different government channels to support Penan patients who faced challenges with treatment.

This trip underscored how the persistence of leprosy among the Penan is the result of multiple interrelated factors—including environmental conditions, socio-cultural beliefs, geographic isolation, and limitations within the healthcare delivery system. We saw new suspected cases, indicating the issue is far from being resolved. A proposal to form an interagency partnership led by primary healthcare champions and leveraging the new 4G network to distribute information to villages has been submitted as the next phase of this initiative ■

Every Bite Counts: Tackling Food Waste to Combat Climate Change



Nurul Farhana Ruslan
GREEN@UMHealth



Nimala Baskaran
GREEN@UMHealth



Shireen Anne Nah
Department of Surgery & Head of GREEN@UMHealth
<https://umexpert.um.edu.my/shireen-nah>

Every meal wasted contributes to climate change. From hospital cafeterias to campus events, even a single uneaten bite carries a hidden carbon cost. Reducing food waste is one of the simplest and most impactful ways to protect both the planet and our food security.

Globally, 1.05 billion tonnes of food were wasted in 2022, representing about one-fifth of all food available to consumers (UNEP Food Waste Index, 2024). This waste contributes approximately 8–10% of global greenhouse gas (GHG) emissions, primarily methane, which is around 25 times more potent than CO₂.

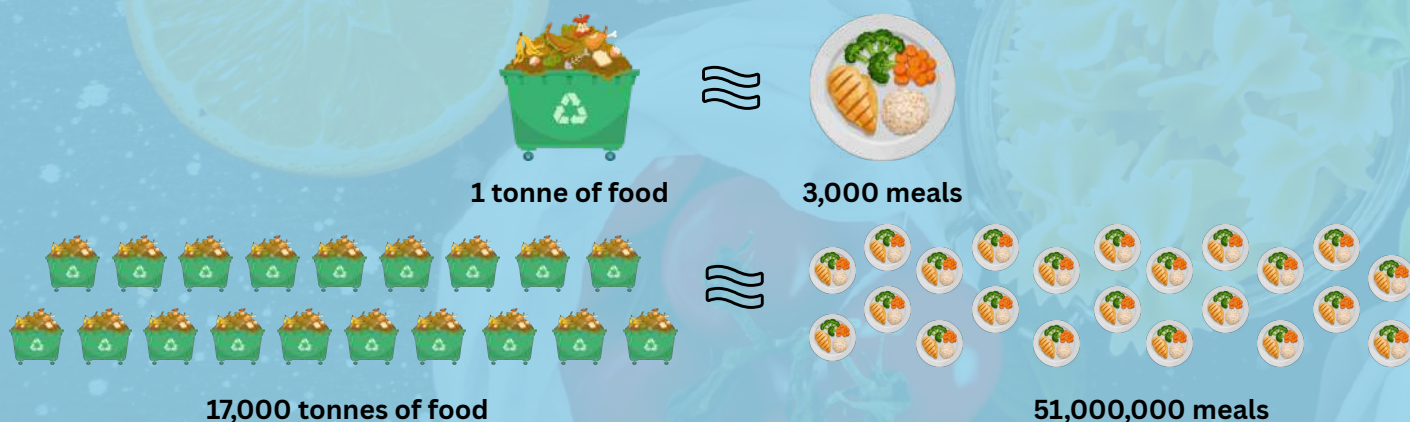
At the Faculty of Medicine (FOM) and the Universiti Malaya Medical Center (UMMC), these concerns are addressed through the UM Zero Waste Campus (ZWC) initiative, integrating sustainable food systems, segregation, and composting into daily operations.

Malaysia's Food Waste Challenge

Malaysia generates around 17,000 tonnes of food waste daily, equivalent to 51 million meals, enough to feed the entire nation one and a half times over. Food waste is not only an environmental issue; it also reflects social inequality and the ethical loss of edible food, as food that could have fed millions instead contributes to climate change.

Within healthcare institutions, the impact is also visible. UMMC's Central Kitchen generates an average of 663 kg of food waste per day, which equals approximately 2,000 meals daily — enough to feed nearly 700 hospital patients and staff every day.

Breaking It Down



Food waste contributes to about 10% of global methane emissions (Batool et al., 2023; Eric, 2024). According to UNEP (2024), 61% of food waste occurs at the household level, followed by 26% in food services and 13% in retail — a distribution similar to Malaysia's pattern.

Global Commitments: Food Waste and the SDGs

Reducing food waste directly supports Sustainable Development Goal (SDG) 12 – Responsible Consumption and Production, particularly Target 12.3, which aims to halve global food waste by 2030. But the ripple effects reach far beyond that:

- SDG 2 – Zero Hunger: Every kilogram saved means more food for those in need.
- SDG 13 – Climate Action: Less methane, lower contributions to global warming.
- SDG 3 – Good Health and Well-being: Cleaner environments and better nutrition.

Malaysia's Twelfth Malaysia Plan (2021–2025) reinforces these SDGs through circular economy principles, sustainable food systems, and food waste valorisation, aligning policy with practice.

World Food Day & Food Loss Awareness 2025

Two international observances in September and October 2025 remind us of our shared responsibility:

- 29 September – International Day of Awareness of Food Loss and Waste
- 16 October – World Food Day, themed “Healthy Diet, Healthy Planet: Our Food, Our Future.”

Both highlight that reducing food waste means protecting the climate and ensuring food security. Mindful eating and thoughtful portions can make a collective difference.

Green Milestones 2025: FOM–UMMC Drive Change

In 2025, UMMC's food waste segregation and composting initiatives showed measurable progress toward UM's Zero Waste and Climate Action targets.



Healthy Diet, Healthy Planet

The EAT–Lancet Commission (2019) advocates a Planetary Health Diet — half fruits and vegetables, one-quarter whole grains and plant proteins, and minimal animal-based foods. This dietary shift could prevent up to 11 million premature deaths annually while reducing food-related emissions and land use.

What You Can Do?

- Order and serve food mindfully
- Separate and compost organic waste
- Support UM's Zero Waste goals to cut landfill waste 50% by 2030
- Choose portion sizes realistically to avoid leftovers

Compiled by the Green@UMHealth Team, Faculty of Medicine, Universiti Malaysia

Sources: UNEP Food Waste Index (2024); EAT–Lancet (2019); FAO (2024); Nazibudin et al., Cleaner Waste Systems (2025)



UNIVERSITI
MALAYA

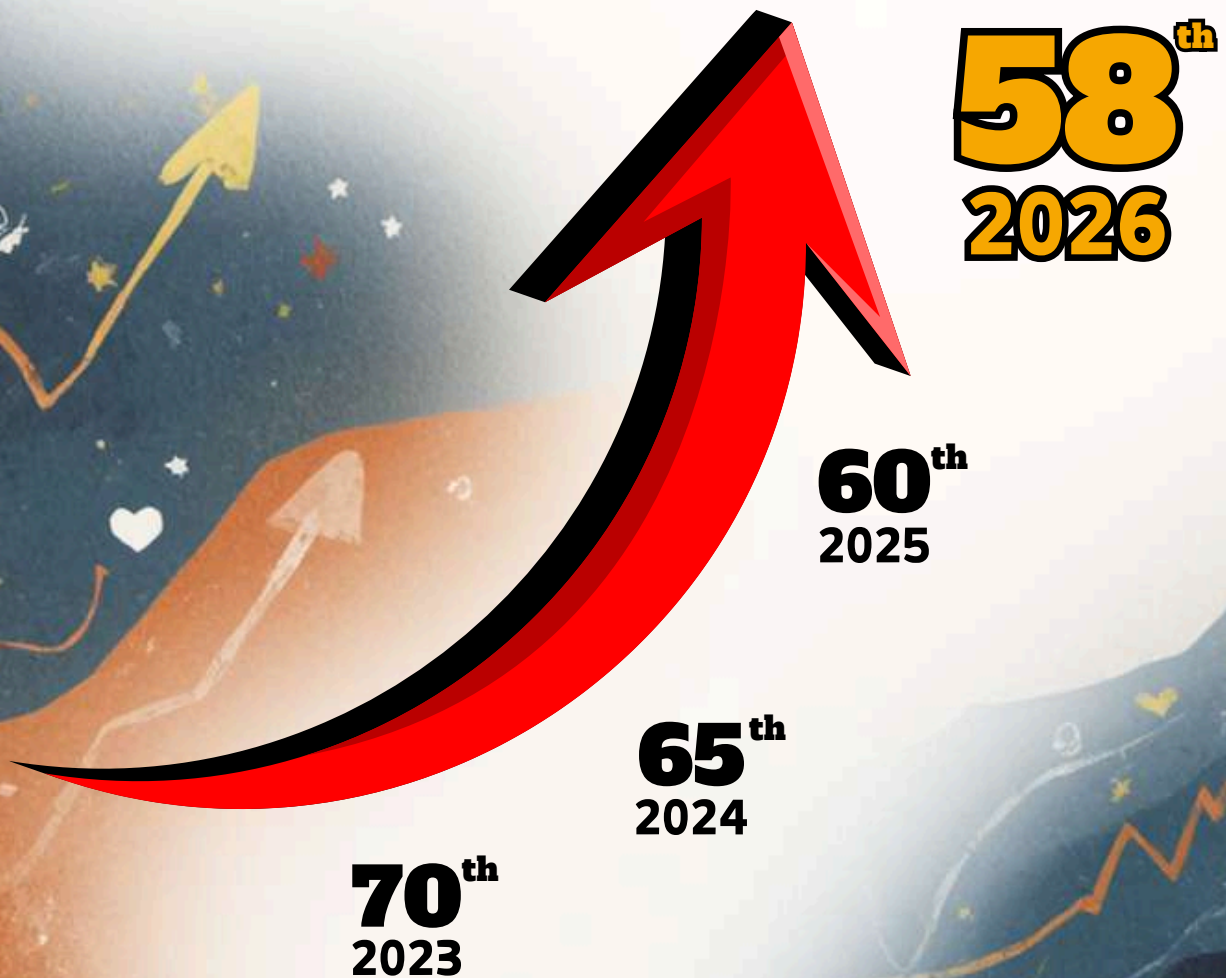


WORLD
UNIVERSITY
RANKINGS

Congratulations

UNIVERSITI MALAYA

QS World University Rankings 2026



TOTAL INTERNATIONAL GRANTS APPROVED 2025 RM18,369,931

Top 10 International Grant Recipients:



Prof. Dr. Chan Yoke Fun
(Medical Microbiology)
RM 4,418,303



Prof. Dr. Lim Lee Ling
(Medicine)
RM 3,265,200



Prof. Dr. Lau Yee Ling
(Parasitology)
RM 3,004,702



A/P Dr. Chang Li Yen
(Medical Microbiology)
RM 2,748,834



Dr. Arutchelvan
Rajamanikam
(Parasitology)
RM 1,259,122



Prof. Dr. Julia Anak Patrick
Engkasan (Rehabilitation
Medicine)
RM 1,159,123



Prof. Dr. Sanjay Rampal
(SPM)
RM 358,533



Dr. Lam Chee Loong
(Medicine)
RM 306,988



Prof. Dr. Wong Won Fen
(Medical Microbiology)
RM 300,000



Prof. Dr. Ivy Chung Zaki
(Pharmacology)
RM 280,044

Congratulations!

TOTAL NATIONAL GRANTS APPROVED 2025 RM25,222,925

Top 10 National Grant Recipients:



Prof. Dr. Ivy Chung
(Pharmacology)
RM 14,457,381



A/P Dr. Azura Mansor
(Orthopaedic Surgery)
RM 1,000,000



Prof. Dr. Jeannie Wong Hsiu
Ding (Biomedical Imaging)
RM 400,700



A/P Dr. Anand Sanmugam
(Surgery)
RM 250,000



A/P Dr. Suniza Jamaris
(Surgery)
RM 250,000



Prof. Dr. Azlina Amir Abbas
(Orthopaedic Surgery)
RM 249,992



Dr. Maziah Mat Rosly
(Physiology)
RM 197,000



Prof. Dr. Kiew Lik Voon
(Pharmacology)
RM 191,000



A/P Dr. Cindy Teh Shuan Ju
(Medical Microbiology)
RM 180,000



Dr. Mohd Hafyuzuddin Md Yusuf
(Emergency Medicine)
RM 176,500

Congratulations!

TOTAL PRIVATE GRANTS APPROVED 2025 **RM80,049,881**

Top 10 Private Grant Recipients:



A/P Dr. Raja Iskandar Shah
Raja Azwa (Medicine)
RM 10,758,336



Dr. Chew Kee Seang
(Paediatrics)
RM 10,529,880



A/P Dr. Rozita Abdul Malik
(Clinical Oncology)
RM 7,069,102



Prof. Dr. Chan Wah Kheong
(Clinical Oncology)
RM 6,033,175



A/P Dr. Pang Yong Kek
(Medicine)
RM 4,231,176



A/P Dr. Adlinda Alip
(Clinical Oncology)
RM 4,180,254



A/P Dr. Marniza Saad
(Clinical Oncology)
RM 2,712,696



Dr. Tan Jiunn Liang
(Medicine)
RM 2,513,184



Dr. Shahreedhan Shahrani
(Medicine)
RM 2,402,934



Prof. Dr. Ida Normiha Hilmi
(Medicine)
RM 2,401,672

Congratulations!

Syabas & Tahniah

PROFESOR DR. LIM LEE LING
(Fakulti Perubatan)

ANUGERAH KECEMERLANGAN WANITA DALAM PENYELIDIKAN

Kategori Sains, Teknologi, Kejuruteraan dan Perubatan (STEM)

MAJLIS MALAM

ANUGERAH MALAYSIA SCOPUS RESEARCH STAR AWARD



Congratulations!

FOM Researchers Listed Among the World's Top 2% Scientists in a **Single Year 2025** Recognized by Stanford University and featured in the Elsevier Data Repository

- | | |
|---|---|
| 1. Emeritus Professor Dr. Liam Chong Kin | 14. Professor Dr. Lim Lee Ling |
| 2. Emeritus Professor Dr. Ng Kwan Hoong | 15. Professor Dr. Rafdzah Ahmad Zaki |
| 3. Professor Dr. Lee Way Seah | 16. Professor Dr. Sanjay Rampal A/L Lekhraj Rampal |
| 4. Professor Dr. Yvonne Lim Ai Lian | 17. Professor Dr. Tan Maw Pin |
| 5. Professor Dr. Lau Yee Ling | 18. Professor Dr. Tay Sun Tee |
| 6. Professor Dr. Moy Foong Ming | 19. Professor Dr. Victor Hoe Chee Wai Abdullah |
| 7. Professor Dr. Sanjiv A/L K. Mahadeva | 20. Professor Dr. Wong Li Ping |
| 8. Professor Dr. Tan Nget Hong | 21. Professor Dr. Tan Ai Huey |
| 9. Professor Dr. Chan Wah Kheong | 22. Professor Dr. Wong Won Fen |
| 10. Professor Dr. Choo Wan Yuen | 23. Associate Professor Dr. Jeyasakthy Saniasiaya |
| 11. Professor Dr. Hesham Mahyoub Sarhan Al-Mekhlafi | 24. Associate Professor Dr. Leo Bey Fen |
| 12. Datin Professor Dr. Indra A/P Vythilingam | 25. Dr. Mahmoud Danaee |
| 13. Professor Dr. Lai Siew Mei Pauline | 26. The late Dato' Professor Emeritus Dr. Goh Khean Lee |

FOM Researchers Listed Among the World's Top 2% Scientists in a **Career-Long** Recognized by Stanford University and featured in the Elsevier Data Repository

- | | |
|--|---|
| 1. Emeritus Professor Dr. Liam Chong Kin | 6. Datin Professor Dr. Indra A/P Vythilingam |
| 2. Emeritus Professor Dr. Ng Kwan Hoong | 7. Professor Dr. Moy Foong Ming |
| 3. Professor Dr. Lee Way Seah | 8. Professor Dr. Tay Sun Tee |
| 4. Professor Dr. Tan Nget Hong | 9. Professor Dr. Wong Li Ping |
| 5. Professor Dr. Hesham Mahyoub Sarhan Al-Mekhlafi | 10. The late Dato' Professor Emeritus Dr. Goh Khean Lee |



Research Office,
Dato Panglima Kinta Eusoff Research Centre,
Level 3, Block I
Faculty of Medicine,
Universiti Malaya,
50603 Kuala Lumpur

Tel: +603-7967 7515



Email address: resfom@um.edu.my

Research Office website: <https://resfom.um.edu.my>

Faculty of Medicine website: <https://medicine.um.edu.my>



Research Office - FOM UM



@fom_um



@fom_research_um