

# Malaysian assistant medical officers: The profession's history, education, practices, and future

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## ABSTRACT

Malaysia's healthcare system features a dual-tier structure with government and private sectors rooted in its colonial history. Assistant medical officers (AMOs) play a crucial role within this system, constituting the third largest group of healthcare professionals. The profession has evolved over 230 years, originating with the introduction of medical assistants to Malaysia by the British East India Company in 1786. Initially known as *apothecaries* or *dressers*, the role's responsibilities have transformed over the years in response to the nation's healthcare demands, as have its associated titles, with professionals becoming known as hospital assistants, medical assistants, and, finally, AMOs. Engaged in clinical duties in emergency and prehospital care, primary healthcare, medical and surgical care, management, and administrative functions, AMOs are linchpins in ensuring comprehensive healthcare services. Their training has progressed from apprenticeships to certificate, diploma, and bachelor's degree programs, ensuring they are well-equipped for diverse healthcare challenges. The profession will continue to evolve through further educational development, strengthening organizational structures, AMO role reinforcement, career advancement, human resource development, and international collaboration. AMOs have emerged as indispensable contributors to Malaysia's healthcare landscape, embodying adaptability and dedication in the pursuit of enhanced health outcomes.

**Keywords:** Malaysia, global, healthcare professionals, healthcare systems, healthcare workforce, assistant medical officers

Malaysia, located in Southeast Asia, has an upper-middle-income economy, with a population of more than 33.4 million people.<sup>1,2</sup> The country offers universal healthcare to its citizens through a two-



FIGURE 1. Map of Malaysia

tiered healthcare system, where a government-run healthcare sector coexists with a private healthcare system. This system was inherited from British colonialism, which ended in 1957 when Malaysia gained independence.<sup>3,4</sup> As of 2023, Malaysia's healthcare facilities comprised 148 government hospitals, 3,121 government health clinics, 207 private hospitals, and 9,830 private medical clinics.<sup>5</sup> In 2022, the healthcare professional workforce in Malaysia included 79,443 medical officers, 117,116 registered nurses, and 24,108 assistant medical officers (AMOs) working across both government and private sectors.<sup>5</sup>

AMOs have played a significant role in the Malaysian healthcare system for more than 230 years. Over time, the professional titles, roles and responsibilities, and education of AMOs have transformed significantly to meet the evolving needs of the country's healthcare system

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and the development of medical fields. Due to healthcare demands influenced by factors such as population growth, increasing chronic illness incidence, and a growing number of national healthcare facilities, Malaysia is anticipated to need more than 40,000 AMOs by the end of 2025.<sup>6</sup> Having more AMOs will play a crucial role in ensuring the population receives sufficient and high-quality healthcare services.

## HISTORY

The AMO profession is one of the earliest health professions in Malaysia. It has existed in the country for over 230 years, dating back to 1786, when medical assistants Michael Cgaffe and Henry Warring were recruited from India to serve in the state of Penang under the British East India Company administration.<sup>7,8</sup>

In 1823, the British East India Company decided that Penang's administration needed to train their own medical personnel to provide healthcare services to the local population during a shortage of doctors. As a result, local young men were recruited for a 5-year apprentice program to enable them to serve in government hospitals as assistant apothecaries. They were trained in pharmacy, basic medicine, minor surgical procedures, and wound dressing. Assistant apothecaries had the opportunity to be promoted to junior apothecaries after serving for 15 years and subsequently as apothecaries after passing more examinations in specialized subjects such as anatomy and physiology, postmortem handling, and pathology.<sup>7,8</sup>

During the British colonial rule in India, particularly in Calcutta (now Kolkata), the titles *apothecary* and *dresser* were commonly used in healthcare services to refer to individuals who dispensed medications and assisted in medical procedures by cleaning and dressing wounds, respectively.<sup>9</sup> This dual role highlighted the multifaceted nature of medical practice at the time, where one professional often performed both pharmaceutical and basic medical care tasks.

In the 19th century, as Malaysia's healthcare services developed, the role of dressers expanded to that of dispensers, laboratory assistants, health records officers, and hospital supervisors. After Malaysia gained independence, dressers were replaced by male nurses. Male nurses were then replaced by hospital assistants, a title that was changed to *medical assistants* in 1985, and to *assistant medical officers* in 2007.<sup>10</sup> The Malaysian Medical Assistants Board regulates the profession under the Act 180, Medical Assistant (Registration) Act 1977. Additionally, a professional association, the Malaysian Association of Medical Assistants, was established in 1986 and oversees the profession.<sup>10</sup>

The AMO's evolution is similar to the transformations seen in comparable roles around the world. For instance, *medical assistants* have transitioned to *medical clinical*

*officers* in Uganda, *clinical officers* in Kenya, and *physician assistants* in Ghana.<sup>11-13</sup> Likewise, in the United States, *physician assistants* have been renamed *physician associates* (PAs) as of 2021.<sup>14</sup> These changes reflect advancements in medical practices and healthcare systems, demonstrating the profession's ability to adapt and meet changing healthcare demands.

## EDUCATION

Prior to independence, dressers or apothecaries were either recruited from India after receiving training at the Madras Medical College in Chennai, Tamil Nadu, India, or they received training through local 5-year apprentice programs.<sup>3,4</sup> There was also an instance in 1905 of seven local students undergoing a 2-year hospital assistant training program at the King Edward VII Medical College in Singapore.<sup>7,8</sup>

After Malaysia gained independence, training for hospital assistants was oriented toward nursing programs, but from 1963 to 1970, the government established a special program to train hospital assistants. The hospital assistant trainees would undergo training alongside nurses in the first year, followed by a 2-year clinical placement in a major hospital. Their training covered various fields including medicine, surgery, emergency care, pharmacology, laboratory medicine, and public health.<sup>7</sup>

Starting in 1970, a complete curriculum for training hospital assistants was established, leading to the opening of the first training school in Seremban in 1972.<sup>3,10</sup> The program awarded a 3-year certificate to hospital assistants until 1985, when the professional title was renamed to *medical assistants*, at which time the program changed its name to reflect the shift. This prompted the establishment of more colleges, including Ulu Kinta Medical Assistants College in 1992 and Alor Setar Medical Assistants College in 1993, to accommodate a growing number of students. By 2002, the training curriculum for medical assistants transitioned from a certificate to a 3-year diploma program using an academic credit-based system, in line with the education standards of other higher education institutions in the country.<sup>10</sup>

The Training Management Division of the Ministry of Health, Malaysia added even more institutions with medical assistant programs, including the Allied Health Sciences College (AHSC) Kuching in 2007, AHSC Kota Kinabalu in 2010, and AHSC Johor Baharu in 2012, to further accommodate the country's need for medical assistants. Additionally, starting in 2007, several public and private higher education institutions began offering diploma programs to meet the growing need for services. These included the Islamic Science and Technology College, Murni Nursing College, UniKL, Widad University College (previously known as Shahputra University College), Pusrawi International College of Medical Sciences, University of Cyberjaya, Lincoln

**TABLE 1.** Scope of practice for AMOs versus AMOTeX<sup>22</sup>

Scope of practice	Non-specialized AMOs	Specialized AMOs (AMOTeX)
Curative	<ul style="list-style-type: none"> <li>Examine and treat patients according to the Standard Operating Procedures (SOP) and Clinical Practice Guidelines (CPG).</li> <li>Provide some medications and injections.</li> <li>Monitor treatment progress.</li> <li>Monitor patients' needs and orient treatment to the patient.</li> <li>Ensure that each patient receives IV therapy as needed.</li> <li>Record the balance chart and identify unusual circumstances.</li> <li>Perform early treatment tasks to restore and maintain basic functions in the ED.</li> </ul>	<ul style="list-style-type: none"> <li>Screen the patient according to case priorities.</li> <li>Carry out comprehensive and complex clinical assessments, and provide specialized procedures and treatment according to the SOP and CPG.</li> <li>Treat emergency cases.</li> </ul>
Promotive	<ul style="list-style-type: none"> <li>Educate patients about their healthcare in relation to illnesses such as diabetes, hypertension, and obesity.</li> <li>Participate in programs like PROSTAR, health camps, and national health campaigns.</li> <li>Find opportunities to improve documentation and data collection services.</li> <li>Attend courses/seminars to increase knowledge and skills in healthcare practice, including in a recognized specialization.</li> </ul>	<ul style="list-style-type: none"> <li>Conduct activities to treat noncommunicable diseases or contagious diseases.</li> <li>Plan and coordinate training courses needed for AMOs.</li> <li>Plan, coordinate, and conduct research and development activities to improve the quality of healthcare services.</li> </ul>
Preventive	<ul style="list-style-type: none"> <li>Conduct quality checks of medical devices.</li> <li>Ensure treatments are safe and protocol-compliant.</li> <li>Adhere to infection control techniques and ensure isolation is practiced when necessary.</li> <li>Provide some medications and injections.</li> </ul>	<ul style="list-style-type: none"> <li>Perform health status assessments including screening tests.</li> <li>Conduct audits of AMOs' practice standards.</li> <li>Ensure adherence to safety and health regulations under the Occupational Safety and Health Act Employment (Act 514) of 1994.</li> <li>Design healthcare policies and guidelines for the institution/ department.</li> </ul>
Rehabilitative	<ul style="list-style-type: none"> <li>Implement patient recovery programs.</li> <li>Provide psychoeducation/psychotherapy.</li> <li>Engage in dietary counseling for patients with diabetes, hypertension, renal failure, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Provide supportive counseling to patients, families, and communities.</li> <li>Engage and coordinate with other professions and organizations to carry out community rehabilitation activities and programs.</li> </ul>

University College, I-System Colleges, DSH Institute of Technology, and others. As of 2024, 2,298 AMO diploma students were enrolled in 17 colleges or universities and 671 bachelor's degree students were enrolled across three universities.

The National University of Malaysia (UKM) pioneered a bachelor's program for AMOs specializing in emergency medicine.<sup>10</sup> Entrants must possess a medical assistant diploma and be registered with the Malaysian Medical Assistants Board. This program, known as the Bachelor of Science in Emergency Medicine with Honors, welcomed its inaugural students in the 2007-2008 academic year after gaining approval from the Board. By 2024, 161 graduates had completed this program, with many securing professional roles in either public or private healthcare sectors. Later, in 2018, Open University Malaysia introduced a similar program, offering distance learning opportunities for registered AMOs, and in 2021, the University Sultan Zainal Abidin launched its own AMO

program, further diversifying available educational pathways. To uphold the standards of AMO education, the Malaysian Medical Assistants Board monitors program curricula as outlined in the Act 180, Medical Assistants (Registration) Act 1977, and programs must comply with the Standards and Guidelines for Medical Assistants' Education Programme.<sup>10</sup>

### SCOPE OF PRACTICE

AMOs in Malaysia are well-trained healthcare professionals who play a vital role in the healthcare system. They provide essential medical services in curative, preventive, promotive, and rehabilitative care, helping to mitigate the shortage of medical providers and ensuring comprehensive and accessible medical care across diverse settings.<sup>15</sup> They have multiple clinical duties, including conducting history-taking and physical examinations, basic laboratory investigations, diagnosing and treating common illnesses, managing medical emergen-



cies, and performing minor surgical procedures.<sup>10,16-20</sup> There are two types of AMOs: nonspecialized and specialized. Specialized AMOs are also referred to as AMO technical experts (AMOTeX), as shown in **Table 1**. Specialized AMOs working in specific departments or clinics have completed postbasic certification in specialized fields such as cardiology, orthopedics, intensive care, nephrology, and others. Their scope of practice therefore differs from that of the nonspecialized AMO.

AMOs work independently, especially in rural communities like Sabah and Sarawak where access to doctors is limited. In hospital environments, they work with physicians and are authorized to perform certain procedures after receiving credentials and privileges in fields such as emergency and trauma care, ENT, orthopedics, and renal care. AMOs also participate in health education, counseling, and the implementation of public health programs.<sup>21</sup> This multifaceted role ensures that AMOs contribute significantly to the efficiency and accessibility of medical care in Malaysia's healthcare landscape.



**FIGURE 2.** AMO performing diagnostic procedure

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**FIGURE 3.** AMO stabilizing patient in an ambulance

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Statistically, specialized and nonspecialized AMOs practice in three primary areas: family and community health (37.7%), emergency and trauma care (33.6%), and medical and surgical specialties (23.7%). Additionally, 5% of AMOs are engaged in administration, management, and governance.<sup>22</sup> These duties closely parallel those of PAs in the United States, Canada, and the United Kingdom, as well as of clinical officers in many African countries.<sup>23</sup>

**Roles in family and community health** AMOs are integral to family and community health. As primary care providers, they diagnose, treat, and manage common minor illnesses and conditions and offer preventive care such as health screenings (**Figure 2**).<sup>10,21</sup> In health clinics, AMOs can prescribe medications such as antipyretics, pain relievers, cough suppressants, cold medications, and vitamins for minor conditions. In cases of more severe illnesses that may require antibiotics, patients are usually referred to a medical officer, or AMOs may prescribe antibiotics under the oversight of a medical officer. Moreover, AMOs engage in health promotion and education initiatives, empowering community members by sharing knowledge of disease prevention and promoting a healthy lifestyle. Their involvement in community outreach and engagement fosters trust and rapport that enables them to understand and address local healthcare challenges. During epidemics and outbreaks like the COVID-19 pandemic, AMOs play critical roles in disease surveillance, treatment, and control, collaborating with public health authorities and fellow healthcare providers.<sup>24,25</sup>

AMOs also provide essential school health services such as relevant screenings. AMOs coordinate emergency responses in community clinics and collaborate with interdisciplinary teams to ensure comprehensive care delivery.<sup>10</sup>

**Roles in emergency and trauma care** AMOs are crucial in emergency and trauma care in Malaysia. They serve as primary personnel comparable with paramedics, especially in ambulance and prehospital care settings, providing prompt medical intervention and stabilizing patients during emergencies.<sup>10,16</sup> Their duties include being the first responders to emergency calls, assessing patient conditions, providing initial treatment, and determining best courses of action under the supervision of emergency physicians. AMOs provide patient care both at the scene and during transportation to medical facilities (**Figure 3**). This work involves managing airways, breathing, circulation, and bleeding as well as immobilizing fractures. They are trained in Basic Life Support, Advanced Life Support, Trauma Life Support, and various advanced and short courses in emergency and prehospital care. AMOs administer medications, perform endotracheal intubation, and use defibrillators to manage critical conditions such as cardiac arrest and severe trauma. AMOs are the managers of prehospital care services and training.<sup>10,16</sup>

During mass casualty incidents, AMOs conduct triage to prioritize patients based on severity, ensuring prompt treatment for those most in need. AMOs also closely coordinate with other emergency services, such as fire-fighters and police, to ensure effective emergency response. They also educate communities on Basic Life Support techniques, such as CPR, and promote emergency preparedness.<sup>16</sup>

**Roles in medical and surgical specialty areas** In addition to family and community health as well as emergency and prehospital care, AMOs play significant roles in medical and surgical specialties. In medical specialties, they assist physicians in diagnosing, treating, and managing various medical conditions. AMOs conduct patient assessments, perform diagnostic procedures, monitor patient progress, and provide patient education on managing health conditions effectively (Figure 4).

In surgical specialties, AMOs' primary responsibilities include managing preoperative care for patients, preparing for surgeries, and ensuring sterile environments. Within the OR, AMOs undertake technical tasks related to anesthesia, such as setting up anesthesia machines, preparing anesthetic drugs, and administering anesthesia in hospitals without an anesthetist, as in such rural settings as Sabah and Sarawak. They support surgeons by passing instruments, setting up suction tubing, and dressing surgical wounds. In postoperative care, they monitor patients in the recovery room, provide wound care, and educate patients on postoperative care instructions and potential complications. AMOs are proficient in procedures such as cleaning and suturing wounds, performing incision and drainage, nail avulsion, performing circumcision, debriding small wounds, removing foreign bodies, and conducting other minor surgical procedures.<sup>17,19,20</sup> Overall, AMOs contribute significant expertise to medical and surgical specialties, ensuring comprehensive and high-quality patient care throughout the treatment process.

## FUTURE DIRECTION

The progression of the AMO profession aligns with advancements in the medical field and the healthcare needs of the nation. Stakeholders have devised a strategic plan spanning from 2016 to 2030 to provide a clear trajectory for the profession's growth.<sup>26</sup> This plan comprises six core areas: educational development, organizational structure strengthening, AMO role strengthening, career advancement, human resource development, and international collaboration. Efforts are underway to enhance AMOs' education, for example, by increasing the availability of bachelor's degree programs, with the objective that by 2030, 75% of AMOs will hold a bachelor's degree.<sup>26</sup> Furthermore, master's and PhD programs tailored to the needs of AMOs are being established at several educational institutions.



**FIGURE 4.** AMO performing an ultrasound

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The AMOTeX initiative is outlined in the Fourth Core of the Profession Development Plan by the Assistant Medical Officers Sector, Ministry of Health, Malaysia.<sup>27</sup> The AMOTeX initiative seeks to elevate the professional status and service quality of AMOs by recognizing their specialized training and expertise. This involves completing specific educational requirements, such as a postbasic certificate or advanced diploma, and obtaining credentials and privileges in a recognized specialty. In 2023, eight specialty fields were identified in which AMOs could become AMOTeX; these include emergency and trauma, nephrology, neurophysiology, orthopedics, cardiology/cardiovascular perfusion/cardiothoracic care and surgery assistance, wound care management, diabetes management, and HIV/AIDS management.<sup>28</sup> More fields will continue to be added to this list to ensure that AMOs possess high technical expertise and competency to provide high-quality service to the community.

Enhancing international relations has a high impact on the profession. In 2020, the profession joined the Global Association of Clinical Officers and Physician Associates (GACOPA), an international alliance that brings together the various health professions that are similar in scope to the AMO role, including PAs, clinical officers, medical assistants, and others, that are found in 68 countries around the globe. This association was established in 2018 and registered in Ghana.<sup>29</sup> In 2020, seven Malaysian AMOs participated in the second conference in Rwanda. The AMO profession was honored to host the third GACOPA conference in Putrajaya, Kuala Lumpur in 2023.<sup>30</sup>

Furthermore, the profession has engaged and actively participated in activities organized by the International Academy of Physician Associate Educators (IAPAE). This includes attending the 2023 Fourteenth IAPAE conference in India and participating in the Learning Opportunities, Objectives, and Outcomes Platform project to map the curricula of similar global health professionals, including that of AMOs.<sup>31</sup>

## CONCLUSION

AMOs are vital to Malaysia's healthcare system, providing essential services across various settings and specialties. The profession's rich history and continuous evolution reflect its responsiveness to the country's healthcare needs. From their early days as apothecaries and dressers to their current roles, AMOs have consistently expanded their scope and expertise. Comprehensive training programs, including diploma and bachelor's degree courses, have ensured that AMOs remain proficient and adaptable. The profession has garnered acknowledgment from the government, which continually supports its endeavors to enhance competency and advance career progression. The strategic plan for the profession's future focuses on further educational development, organizational structure strengthening, AMO role strengthening, career advancement, human resource development, and international collaboration. Through these initiatives, AMOs will continue to play a critical role in improving healthcare access and quality in Malaysia, particularly in community health, emergency and prehospital care, and specialty areas, while also contributing to global healthcare standards through active international engagement. **JAAPA**

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