

Aligning Graduate Medical Education With the Health Care Needs of Abu Dhabi: One Decade After the Restructuring Initiative

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Introduction

In 2010 the Department of Health Abu Dhabi (DoH) began a strategic initiative to reform its graduate medical education (GME) system because it was misaligned with the health care needs of its population and provided an insufficient number of physicians. This transformative initiative, described in the 2013 “Restructuring Graduate Medical Education to Meet the Health Care Needs of Emirati Citizens,” has now been in place for more than 10 years.¹ This follow-up report examines the outcomes and implications of these GME system changes. We hope that this information will help others who are planning to restructure their own GME systems and programs.

Method Notes

Data for this study were derived from multiple sources, including DoH health care capacity workforce data from the DoH online dashboard,² the National Resident Matching Program International (NRMP-I) matching data,³ and physicians’ licensing databases.⁴ The DoH online dashboard serves as a central system for accessing health statistics and tracking various health care metrics in Abu Dhabi. Maintained since 2010, the DoH database contains demographic and professional information on all practicing and in-training physicians.

GME Prior to 2010

In 2007, Abu Dhabi initiated health care reforms by establishing the DoH (formerly Health Authority Abu Dhabi) and shifting from a government-funded system to a mandatory health insurance program.^{5,6} This change aimed to provide accessible, high-quality, and affordable care through public-private partnerships with international organizations like Cleveland Clinic and Imperial College London. However, challenges to these reforms included a low physician-to-population ratio (155 per 100,000) and a heavy reliance on expatriate physicians (93%).

At the same time, GME programs experienced limited training facilities, low enrollment, and inconsistent

quality. From 2008 to 2010, most residency programs had less than 50% occupancy, with some programs, such as emergency medicine, at 17%.¹ The GME system lacked standardized frameworks, consistent criteria, and adequate oversight, leading to poor academic performance and low certification examination pass rates. Graduates from Abu Dhabi’s GME system accounted for only 1.4% of the board-certified physician workforce, with critical shortages in fields like anesthesia and critical care.¹ Notably, the GME pathways were not regarded as a reliable source for the workforce that was needed, the term “resident” was not formally recognized, and all trainees were referred to as general practitioners because of their entry-level physician roles. This approach led to residents being viewed more as workers than learners and an emphasis on service over education.

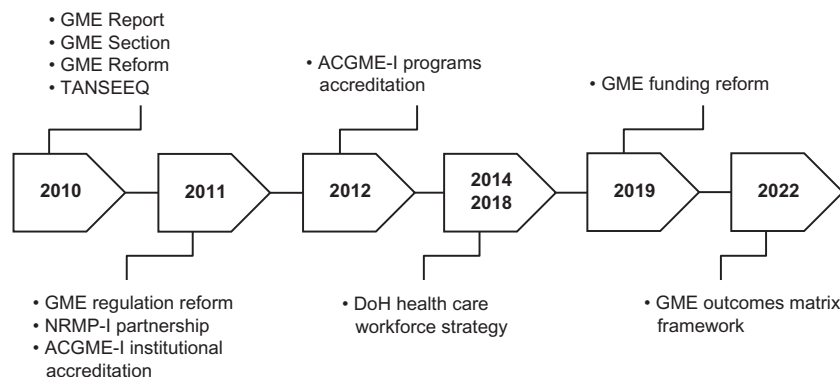
GME funding was also unstable and tied to hospital operational budgets, which contributed to inconsistent training quality. This funding model produced specialists based on hospital needs rather than the needs of the overall health care system. The GME system lacked accountability, consistent training quality, and growth opportunities for residents. Several previous initiatives had attempted to address these problems, but they relied mostly on individual program efforts and faced operational limitations and regulatory obstacles.

GME Reform in 2010 and Beyond

The restructuring of GME in Abu Dhabi aimed to create a comprehensive system aligned with the health care needs of the Emirati population. This change was crucial for establishing a sustainable, locally trained physician workforce. Key reforms addressed governance, regulations, operations, and financing, laying the groundwork for a robust GME system (FIGURE 1). A pivotal development was the establishment of a GME Section within the DoH, which created a regulatory framework to ensure a dynamic and high-quality GME system.

In 2010, the GME Section released a report titled “Emiratization of the Healthcare Workforce,” to establish core strategies for workforce challenges.¹

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**FIGURE 1****Important Milestones of GME Reform in Abu Dhabi Since 2010**

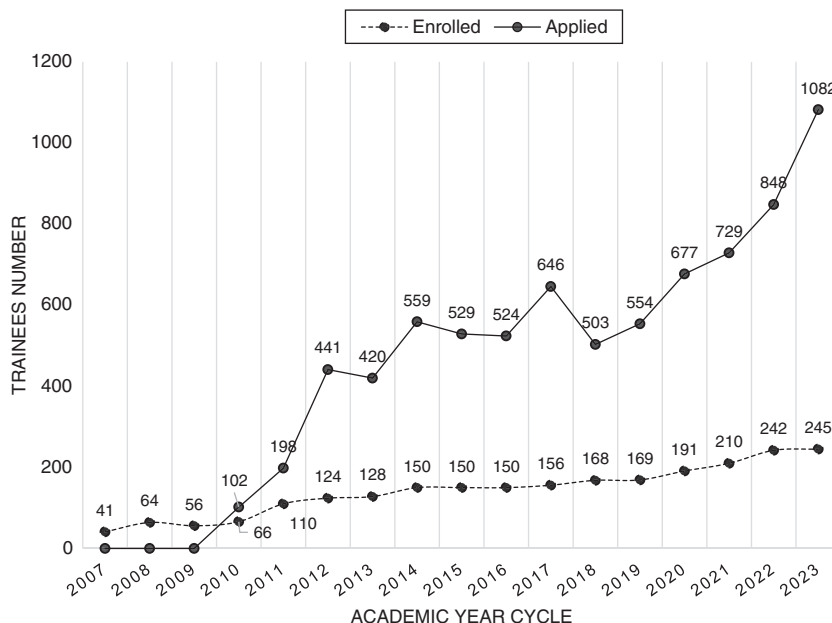
Abbreviations: GME: graduate medical education; TANSEEQ, DoH Standard for the Allocation of Physicians in Residency Training Programs in the Emirate of Abu Dhabi; ACGME-I: ACGME International; NRMP-I; National Residency Matching Program International; DoH; Department of Health.

The report proposed implementing GME best practices, creating robust program administration structures, and establishing standardized regulatory processes under a unified system to enhance the local workforce and reduce reliance on international recruitment. The DoH leadership embraced these recommendations, which led to the formation of a strategic alliance among key academic and health care stakeholders. This coalition leveraged their collective expertise, insights, and resources to create the fundamentals of GME reform.

One of the initial responses to Abu Dhabi residency matching was the introduction of the TANSEEQ program, an emirate-wide system for determining residency

posts and matching applicants. Managed by the DoH and in partnership with the NRMP-I, TANSEEQ became the first centralized process for medical resident applications, selection, and enrollment. It established a defined academic cycle, standardized timelines for resident enrollment, and required all applicants to meet eligibility criteria, undergo a centralized assessment, and complete structured interviews before being matched based on merit. The oversight of this process was centralized under the DoH.⁷

A foundational intervention in Abu Dhabi's GME transformation was the implementation of standards from ACGME International (ACGME-I), which began

**FIGURE 2****The Number of Applicants in Relation to Enrolments in TANSEEQ for Medical, Dental, and Pharmacy Residency and Fellowship Programs From 2007 to 2023**

Abbreviation: TANSEEQ, DoH Standard for the Allocation of Physicians in Residency Training Programs in the Emirate of Abu Dhabi.

with institutional accreditation in 2011 and program-specific accreditations in 2012.⁸ This made Abu Dhabi the first in the region and the second globally to achieve ACGME-I accreditation.¹ The adoption of ACGME-I standards improved the learning environment and established consistent procedures for all programs. Subsequently, GME programs transitioned from a traditional apprenticeship model to a structured, competency-based training system, featuring defined curricula, regular assessments, and dedicated teaching time for faculty. This outcomes-based system emphasized continuous assessment to better prepare residents for independent practice.⁹

The rapid reforms in GME in Abu Dhabi necessitated changes to health care regulations to avoid operational challenges for trainees. In 2011, an alternative licensing pathway was created alongside the existing procedures. This new pathway eliminated obstacles for newly graduated physicians by exempting them from the previous requirements of 2 years of experience and a licensing examination designed for experienced physicians. Instead, the new pathway initiated a centralized admission examination assessing basic medical knowledge, professionalism, communication skills, and critical thinking. This change was essential to support a new paradigm of “physician learner” rather than “physician worker.” It allowed newly graduated physicians to practice through GME, without the barriers of the previous system. These regulatory changes aligned with the growth of the Abu Dhabi health care system and the needs of the Emirati population.

From 2014 to 2018 the DoH enhanced GME oversight by incorporating it as a key strategic theme in its health sector strategy. This initiative aimed to unify stakeholder vision, standardize operations, and align with international best practices.¹⁰ In 2018 the DoH aligned its GME strategy with Emiratization objectives, health capacity needs, and workforce planning. The strategy was further strengthened by incorporating GME into the United Arab Emirates (UAE) federal Professional Qualified Requirement framework, which standardizes health care licensing across the UAE.¹¹

Abu Dhabi also revamped its GME funding model with a well-defined structure. In 2019, the DoH established a protected educational fund within hospitals' operational budgets, with disbursements managed through GME service agreements, similar to global practices.¹² The model shifted from hospital-based to resident-based funding, which facilitated multisite training and transitions to fellowships or scholarship programs. This separation of GME funding into a protected fund enabled academic departments and DoH to develop a more adaptable system and better support GME changes.

In 2022, the DoH established a GME outcome matrix to evaluate program performance based on academic and operational metrics. These outcomes assess residents' progress, success rates, research participation, employability, and workforce integration. Potentially, these metrics can be linked to a “pay-for-performance” financial program, to provide a holistic view of the programs' effectiveness and impact on the health care system.¹³

Outcomes

GME and the Health Care System

The integration of GME into Abu Dhabi's health care system transformed hospital strategies, infrastructure, governance, human resources, finance, administrative operations, and care provision. Leading institutions like Abu Dhabi Health Services Company and Cleveland Clinic Abu Dhabi embedded GME into their core governance and operational models and recognized its pivotal role in developing a skilled health care workforce. These institutions invested heavily in state-of-the-art facilities and comprehensive training programs accredited by international bodies such as ACGME-I and the National Institute of Health Sciences. Substantial investments were made to fund training infrastructures and recruit top-tier faculty. The restructured system established dedicated leadership roles, such as chief academic and designated institutional officials, as well as hierarchies of academic personnel to oversee and coordinate training programs. This ensured a collaborative environment where clinical practice and academic training are closely integrated. The accreditation by ACGME-I and strategic guidance from the DoH ensured robust quality assurance mechanisms and continuous evaluation of training programs. Over time, academic hospitals transitioned from relying on general practitioners to filling positions with residents, to ensure a sustained source of physicians trained to deliver high-quality patient care and how to stay up to date in medical advancements.

GME and the Number of Physicians

A primary GME reform objective was to align GME with population needs for health care professionals. The focus on developing a locally driven GME system has allowed Abu Dhabi to address imbalances in health care worker supply. By 2023, the DoH had established 63 accredited residency and fellowship programs across 46 specialties at 8 institutions, a nearly 3-fold increase from 22 programs in 2011. By the end of 2023, the DoH had received over 7812 applications to the reformed GME system, with an average of approximately 558 applications per year.

In 2023 the number of applications was 1082, which yields an application-to-capacity ratio of 4:4 applicants for each GME post, which is the highest ratio since 2010, when the ratio was 1:5.¹⁴

Since the implementation of GME reforms in 2010, over 2200 residents and fellows have enrolled in Abu Dhabi training programs. The proportion of specialists who are graduates of Abu Dhabi's GME programs has increased from 1.4% in 2013 to 11.6% currently. The reforms are also associated with improvements in board certification rates among practicing physicians, from 63% pre-reform to 76% today. The change for UAE national physicians has been particularly striking: board certification rates surged from 39% in 2010 to 77% in 2023. These positive trends are likely due to the enhancements to the GME system.

GME and Workforce Quality

A major goal for the reform of GME in Abu Dhabi was to increase the competence of physician graduates and thus improve the quality of patient care. A study of a family medicine residency program in Abu Dhabi provides evidence of the positive impact of GME reform. This study compared 2 cohorts of residents, one before implementation of the reform and accreditation by ACGME-I, and another cohort after the reform. The study demonstrated better performance metrics after the reform, including in-training examination scores and milestone evaluations.¹⁵ A 2015 study highlighted the improvements in patient care and outcomes within the Pediatric Department of Tawam Hospital, Abu Dhabi, over a 3-year period.¹⁶ Analysis revealed a significant decrease in clinically adverse events, despite increased patient admissions and acuity. The average length of stay for inpatient pediatric patients also reduced from 3.2 days in 2010 to 2.8 days in 2012-2013. These findings indicated enhanced efficiency and care quality, potentially attributable to the newly implemented competency-based medical education and postgraduate medical education accreditation system.¹⁶

Lessons Learned and the Future

The reform of GME in Abu Dhabi offers lessons for the future of GME in Abu Dhabi and other regions. A key driver of success was the top-down approach, with leadership and oversight anchored at DoH level. By taking a proactive leadership role, the DoH developed policies, established regulatory mandates, secured leadership endorsement, guided and monitored the reform process, and ensured the system's cohesion. This reform transformed GME into a more dynamic, responsive, and effective system.

Another key insight is the successful implementation of "glocalization," which blends global best practices with local needs. This approach allowed Abu Dhabi to adopt international standards, like ACGME-I, while adapting them to regional contexts.¹⁷ Coordinated efforts among accreditors, administrators, and educators, particularly in regulatory oversight, ensure that the GME system remains responsive to current and future health care challenges. Data-driven decision-making has been a crucial enabler in DoH oversight, as it allows real-time adjustments to educational strategies based on performance and outcome metrics. Complementing this, the introduction of competency-based training shifted GME focus from time-based to outcome objectives. The Emirates Medical Education Competency Framework (EmiratesMed) and entrustable professional activities bridge undergraduate to postgraduate competencies, and further support DoH's data-informed strategies.¹⁸

Abu Dhabi's health care system is poised next to incorporate big data and artificial intelligence to deliver personalized, precise, and cost-effective care to the population. This vision will inevitably extend to the GME model. This integration includes enhancing trainees' competency in AI science and leveraging AI to provide personalized learning experiences for residents.¹⁹

Summary

Abu Dhabi's comprehensive GME reform has substantially improved the quality and quantity of health care professionals and aligned medical training with local needs. This experience emphasizes the importance of developing a unified vision, securing vertical buy-in from leadership and stakeholders, using strategic and operational mapping, and glocalization. The reform also highlights the importance of data to drive decision-making and facilitate continuous quality improvement. These strategies are crucial for developing a resilient and adaptive GME system that effectively meets evolving health care demands.

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