EDITORIAL

Postgraduate medical education and training in Iraq: How should we modernise?

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The goal of medical education is to meet the needs of the population by creating and training the workforce. Those needs evolve over time and require periodic evaluation to ensure that undergraduate and postgraduate medical education continue to address those needs. It is also important to ensure that other healthcare professions education (e.g. nurses, physiotherapists, occupational therapists, laboratory technicians etc.) aligns with those needs and evolves accordingly. The modern practice of medicine started in Iraq when the British medical corps established the first Health Office in Basrah in December 1914 and later, in 1918, appointed Dr JW Patterson as the first medical officer in Basrah.[1] The first medical school in Baghdad was established in 1927 based on the British style of training and health services.[2] Until the 1970s, the only available postgraduate study opportunities for Iraqi physicians was through working/studying in the United Kingdom, and to a lesser degree, in the United States of America.[3] After obtaining the medical degree (M.B.Ch.B.) from an approved medical college in Iraq, doctors progress through an internship (2 years) and rural service/senior residency before applying to higher specialisation programs from the Boards of Medical Specialisations. The establishment of the Arab Board of Health Specializations in 1978 by the Council of Arab Ministers of Health marked a new era of medical postgraduate education and training in the participating Arab countries, including Iraq. However, in 1986 there was a call by the Ministry of Higher Education to establish an Iraqi Board for Medical Specialities in response to the increasing number of candidates to get enrolled in the program and the challenges facing Iraqi physicians graduating in large numbers from newly established medical colleges. The first intake of the Iraqi Board was in 1988 with 129 students in 4 specialties. This number has grown over the years to 2530 students (including 25 trainees from outside Iraq) in 37 specializations.[4] The Arab Board of Health Specializations continued to enrol and prepare specialists in Iraq under the auspices of the Ministry of Health.[5] Training occurs in approved training centres for 4-5 years, with several other subspecialisation fellowships established over the years. Training modules include a range of activities in inpatient and outpatient settings, including, for some programs, a requirement for a research project and a thesis. Assessment methods include theoretical and practical exams. Quality of training has been highlighted as an issue by Iraqi and Arab Board graduates in a study from 2016. It called for the Arab and Iraqi Boards to audit the training standards and implement the necessary changes for improvement. [6]

What a trainee learns during the postgraduate education course should not only based on patient encounters only but should include a structured program of activities, roles and responsibilities to support and facilitate learning. Despite this rapid development in the number

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- The goal of medical education is to meet the needs of the population.
- Postgraduate training should develop future leaders, scholars, health advocates and medical experts.
- All teaching and learning strategies should lead to the achievement of the same professional capabilities.
- There is a need to agree a set of outcomes expected at the end of specialist training in Iraq.

and capacity of programs, the documented curricula are neither clearly defined nor undergoing periodic evaluation and development. There is, however, a clear distribution timetable of the trainees throughout the years of the board based on slots in recognised training centres.

How postgraduate training is different to undergraduate training

When an activity is new or not that familiar to the resident, the consultant/trainer will create an opportunity for low-stakes practice (or formative experience) by asking the resident to describe the care he/she intends to deliver ("Tell me what you make of this and what you are planning to do?"). With more familiarity with the task, the resident may perform the care under direct observation and with more familiarity and competence comes less degrees of supervision until independent practice is achieved. In a clinical team led by a consultant, there is a similar relationship between the resident and more junior trainees. The intern has a comparable relationship with the medical students. This highly structured set of relationship characterised by layers of delegation and supervision operates to allow clinical learners at various points in training to focus on practicing tasks they have just learned and on pushing the boundaries of their skills and understanding to the next level while avoiding undue risk to patients.[7, 8]

In contrast to medical students' interaction with patients, residents' interactions engage patient care more holistically. Correspondingly, although those who supervise residents may use decomposition, breaking down of tasks or concepts, and other approaches to simplify the learning task,[9] pedagogies at the postgraduate level tend to be multipurpose. Thus, the two distinctive features of clinical teaching at the residency level are **(1)** the dominance of peer and near-peer teaching and **(2)** the role of the faculty supervisor, who serves as the teacher, the supervisor of care and guarantor of quality, the team leader (a role shared with the senior-most resident) and in some cases the patient's own long-term physician. The relationship that consultants/senior trainers establish with residents on clinical rotations powerfully affects those residents' estimation of the learning value of that rotation.[10] The distributed sources of teaching make the environment for learning at the residency level rich and stimulating.

In postgraduate training, similar to undergraduate education, patients seen and clinical care delivered by residents offer ample opportunities to interact and learn and contribute to the curriculum of the specialty. Repeated exposure to common and important conditions and participation in management afforded over the course of residency amounts to a structural form of "deliberate practice"[11] and results in a deep reservoir of tacit knowledge[12] that underlies clinical judgement.[13] In addition to knowledge and clinical skills, the residency curriculum needs to cover a large number of areas of education and training including: the learning trajectory, emphasis on inpatient care, clinical rotation, continuity clinic and outpatient blocks, procedural skills pertinent to each speciality, research skills and practice, curriculum didactics: meetings and conferences, stimulated/directed/self-directed learning, conceptual learning, learning-by-practising (experiential learning), learning-by-doing (performance learning), from learning skills to practising procedures, learning and practising inquiry, innovation and quality improvement, developmen-

tal professional formation, systems of trainee's effective assessment and system of curriculum (program) evaluation.[14]

Outcomes-based curricula

The next development in curricular design focuses on bringing into alignment the methods of instruction, learning process, assessment methods and intended curricular outcomes. For example, the Association of American Medical Colleges (AAMC) core Entrustable Professional Activities (EPAs) are a set of professional activities that all first-year residents must be able to perform on day 1 of residency with indirect supervision.[15] These principles are implemented in an increasing number of postgraduate education programs around the world, for example, Accreditation Council for Graduate Medical Education (ACGME) in the United States[16] and the General Medical Council (GMC) Generic Professional Capabilities (GPC) in the United Kingdom.[17] They focus on what curricula need to aim for in terms of capabilities at the end of training to train doctors capable of providing safe and effective care through a set of professional values, behaviours, skills and knowledge. That way, the training activities in the curricula will enhance the role of the postgraduate training doctor (at residency and fellowship level) not to just recite medical knowledge but also to incorporate other roles and responsibilities such as being a professional, communicator, scholar, collaborator, leader, health advocate and medical expert. By focusing on outcomes and what the trainee can do, curricular designs moves away from focusing on one element per se to dealing with the learning and professional practice as a system with a view to generate learner able to perform a set of capabilities entrusted by their trainers and beyond.

An example of the new curriculum being implemented in the UK in 2022

The new Internal Medicine (stage 2) curriculum is being implemented this year in the UK and incorporates the new Capabilities in Practice (CiPs).[18] CiPs are based on the principle of EPAs. This moves the training from competence and coverage of subjects/presentations to what the trainee can perform using levels of trainers' entrustment as a guide. This ranges from ***Level 1*** (Observation only), ***Level 2*** (Entrusted to act with direct supervision), ***Level 3*** (Entrusted to act with indirect supervision), to ***Level 4*** (Entrusted to act unsupervised), which is at the level of completion of training. All medical specialities training (e.g. endocrinology and diabetes, nephrology, cardiology, respiratory etc.) are expected to use those CiPs to design their speciality-specific curriculum program. Those CiPs were derived from the UK General Medical Council (GMC) set of Generic Professional Capabilities. The GMC is the regulator of medical practice in the UK and sets the standards of practice (Good Medical Practice) and expected outcomes of undergraduate and postgraduate training programs. Training in the new curriculum will, as in the previous curriculum, culminates with the award of 'Certificate of Completion of Training (CCT)' in Internal Medicine and the relevant speciality. The Generic Professional Capabilities (last updated 2017) are a mandatory set of capabilities for those training for the award of CCT (or equivalent) should demonstrate at the end of their training and include nine domains: Professional values and behaviours, Professional skills, Professional knowledge, Capabilities in health promotion and illness prevention, Capabilities in leadership and team working, Capabilities in patient safety and quality improvement, Capabilities in safeguarding vulnerable groups, Capabilities in education and training, Capabilities in research and scholarship.[17]

The new Internal Medicine stage 2 curriculum aims to produce doctors with the generic professional and clinical capabilities needed to take overall responsibility for managing patients presenting with a wide range of general medical symptoms and conditions. They should be skilled in diagnostic reasoning, differential diagnosis, management of co-morbidities, dealing with uncertainty, recognising when specialist care would (or would not) be appropriate, and determining when care should be palliative. After training, they will be capable of independent, unsupervised practice and be eligible for appointment as a consultant in the

UK National Health Service (NHS). The curriculum's learning outcomes are divided into two categories (generic and clinical). For each speciality, there is an additional set of clinical CiPs. The endocrinology and diabetes CiPs are outlined below (as an example of a specialty).[19]

Generic Capabilities in Practice (CiPs):

1. Able to successfully function within NHS organisational and management systems
2. Able to deal with ethical and legal issues related to clinical practice
3. Communicates effectively and can share decision-making while maintaining appropriate situational awareness, professional behaviour and professional judgement
4. Is focused on patient safety and delivers effective quality improvement in patient care
5. Carrying out research and managing data appropriately
6. Acting as a clinical teacher and clinical supervisor

Clinical Capabilities in Practice (CiPs) for internal medicine:

1. Managing an acute unselected take.
2. Managing the acute care of patients within a medical speciality service.
3. Providing continuity of care to medical inpatients, including managing co-morbidities and cognitive impairment.
4. Managing patients in an outpatient clinic, ambulatory or community setting, including management of long-term conditions.
5. Managing medical problems in patients in other specialities and special cases.
6. Managing a multi-disciplinary team, including effective discharge planning.
7. Delivering effective resuscitation and managing the acutely deteriorating patient.
8. Managing end of life and applying palliative care skills.

Clinical Capabilities in Practice (CiPs) for endocrinology and diabetes (example of a speciality):

1. Providing diagnosis and management of diabetes mellitus as a long-term condition in outpatient, ambulatory or community settings.
2. Providing diagnosis, support and management for people with diabetic foot disease.
3. Providing diagnosis, support and management for women with diabetes and endocrine disorders in the perinatal period.
4. Providing diagnosis, support and management of diabetes and endocrine disorders in adolescents and young adults (AYA).
5. Providing diagnosis, support and management for people with endocrine disorders in the outpatient and ambulatory settings.
6. Providing support and management of diabetes and endocrine disorders in the perioperative period.
7. Providing support and management of people with diabetic and endocrine emergencies, including management of these conditions during acute illness.

Postgraduate training in Iraq and future directions

Whilst the development of a wide range of subspeciality programs has progressed over the last decades in Iraq, to date there is no agreed set of general professional capabilities or outcomes expected at the end of the specialist and subspeciality training. This will require a wide agreement from all boards of training. Passing the postgraduate training board exams is the mainstay of progression towards specialisation.

The provision of experiential learning opportunities for trainees based on a set of capabilities expected at the end of training is crucial for developing future doctors and cultivating a culture of scientific inquiry.[20]

The lack of an agreed set of professional capabilities or outcomes relevant to each speciality and observed during trainees assessment leaves the learning process and assessment methods open to interpretation and variation as there are no goals to aim for. For such standards to be designed and enacted, the regulator of doctors in Iraq needs to collaborate with the stakeholders of healthcare provision, regula-

tion and training. These include the Ministry of Health, Ministry of Higher Education and Scientific Research and the Boards of Medical Specialisations. This will start the process of creating those standards and designing post-graduate training curricula that are based on the latest global developments in medical and health professions education. All teaching and learning strategies should lead to the achievement of the same professional outcomes. The review of postgraduate training in Iraq needs to take into account the evolving needs of the population of Iraq.

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Abbreviations list: Accreditation Council for Graduate Medical Education (**ACGME**), Adolescents and young adults (**AYA**), Association of American Medical Colleges (**AAMC**), Bachelor of Medicine, Bachelor of Surgery (**M.B.Ch.B**), Capabilities in Practice (**CiPs**), Entrustable Professional Activities (**EPAs**), General Medical Council (**GMC**), Generic Professional Capabilities (**GPC**), National Health Service (**NHS**) .

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