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COMMENTARY

Innovations in Medical Internship: Benchmarking and Application within the King Saud bin Abdulaziz University for Health Sciences

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A B S T R A C T

Introduction: While the medical internship (MI) has evolved in some countries into competency-based training with innovative tools for assessment and feedback, the traditional MI is still the norm in many countries.

Aim: To describe recent advances in the MI in several countries, to discuss the current MI situation in Saudi Arabia as an example of a country that applies a traditional MI, and to present a Framework for Medical Interns' Competencies (FMIC) implemented within the King Saud bin Abdulaziz University for Health Sciences (KSAU-HS).

Methods: Common electronic databases were searched for the years 1990 to 2008 under keywords related to medical internship education. Information on curricula designed for medical interns or junior doctors in selected countries was obtained by searching relevant websites. At the KSAU-HS, the FMIC was created by first building the case for the urgent need for revising the MI and adapting international approaches to the KSA's needs, followed by dialogue among faculty and leaders, planning, coordination and execution of the framework.



Results: Two trends were identified in the recent evolution of the MI. In North America, the first postgraduate year now serves the traditional purpose of the MI. Australia and the United Kingdom have embedded the MI within junior doctor training. These innovative curricula have in common a focus on the domains of medical knowledge, clinical practice, professionalism and communication skills. The FMIC applies innovative principles during the MI years customized to the local medical education setting.

Conclusion: The evolution in medical education and healthcare systems worldwide has necessitated innovations in the MI. The FMIC is a model whereby innovative curriculum was introduced to enhance the outcomes of the MI in a country that has applied a traditional MI.

Keywords: Medical internship, Saudi Arabia, undergraduate education, curriculum, clinical education, training

Introduction

The medical internship (MI) was established in the 1940s as a transitional period for newly graduated doctors starting their careers^{1,2}. Traditionally, the MI was a one-year, supervised period spent in different clinical placements ranging from the major specialties to elective areas. As a natural evolution in the MI, new dimensions have been added by introducing innovative methods of adult learning, embedding the MI within longer postgraduate specialty training, and creating competency-based curricula³⁻⁶. It has become accepted that interns, as active learners, should engage in practice-based learning that encourages reflection upon their experiences and that is aimed at helping them identify and pursue their learning needs supported by appropriate feedback. This highlights the importance of ensuring that the assessment of learners' performance and competency, common within the undergraduate period, continues through the internship period. These developments in the MI are, indeed, a natural extension of the innovations introduced by most governing bodies that have shifted undergraduate medical education from previous approaches that relied on following a set of standards to a curriculum-based approach that stresses demonstrated competencies and practice outcomes. Such curricula transform the core abilities required in effective practice into educationally useful elements⁷. Recently, changes in the delivery of healthcare have added further complexity to the MI by introducing new expectations in the areas of professionalism, patient safety and clinical governance to facilitate the delivery of quality care⁸⁻¹⁰.

These multiple, complex roles expected of the MI are particularly challenging for countries where new medical schools have recently been established, medical education is not well-regulated and structured, and traditional models for the MI are still the rule. In the Kingdom of Saudi Arabia (KSA), the first medical school accepted its initial cohort of students in 1969. Since then, many other new medical schools have been established, now exceeding twenty-five in number. There has been justified concern that the increasing number of physicians-in-training in Saudi Arabia, the lack of coordination of training posts for the MI, and the lack of national standards for the MI may be harming the quality of training and educational outcomes. In response, the College of Medicine at King Saud bin Abdulaziz University for Health Sciences (KSAU-HS) undertook an initiative to create the Framework for Medical Interns' Competencies (FMIC), a competency and performance-based curriculum that sets guidelines for the supervision, organization, evaluation, and development of the MI at the University. The goal of this paper is to describe the recent developments in the MI in other countries and describe the FMIC as an example of a competency and performance-based curriculum for the MI.



Methods

Identifying Innovations in the Medical Internship in Other Countries

The electronic databases of Medline, Cochrane's EPOC (Effective Practice and Organization of Care Group), and Google Scholar were searched within the years 1990 to 2008 for English language papers, combining the search terms "Medical Internship" with the keywords "junior doctor", "Saudi Arabia", "framework", and "CanMEDS" (the Canadian Medical Education Directions for Specialists). Two hundred and five articles were identified in Medline, seven in Google Scholar, and six in Cochrane's EPOC. The abstracts of these references were screened for relevance to the paper's objectives. Bibliographies from the identified articles were scanned to locate other relevant papers. Also searched were the websites of the organizing bodies that introduced innovations in the MI in the United States of America (USA), Canada, the United Kingdom (UK), and Australia. It was noted that few publications were referring to MI in the KSA. Information referring to the structure and organization of the MI was collected from websites of the universities in the KSA (Table 1). We also gathered information on the recommended objectives, structure and organization of the MI from the CanMEDS, the United Kingdom Foundation Program, the Australian Curriculum Framework for Junior Doctors, and the Global Minimum Essential Requirements^{4-6,11}. We also approached selected experts in these countries to gain better insight into their countries' curricula. We further reviewed the documents that describe and regulate the FMIC, which was established to govern the MI period at KSAU-HS.

Developing the Framework for Medical Intern's Competencies (FMIC) at KSAU-HS

To address the urgent need to introduce innovation into the University's MI, the principle author constructed the initial proposal for the FMIC based on the literature review and international experiences. This proposal was critically reviewed by a panel of experts from various specialties and medical educationalists at KSAU-HS, through a focus group. A second draft of the FMIC proposal was updated and then reviewed by international experts in medical education. Prior to implementation, the FMIC was approved by the governing bodies in the college of Medicine at KSAU-HS. To overcome any challenges or resistance, a faculty enhancement program was launched as part of the systematic approach adopted for the FMIC implementation. This program included workshops conducted by an educationalist and covered various aspects of the faculty role like mentoring, work-based assessment, and evaluation. The FMIC was applied to the first and second cohorts of students who graduated from KSAU-HS on August 2008 and August 2009.

Results

The results of the literature review are presented in three sections. The first section describes the recent developments in the MI and international experiences in the USA, Canada, the UK, and Australia. The second section is a description of the current situation in KSA as an example of a country that still generally supports a traditional model of MI and has recently undertaken initiatives to develop the field of medical education. Finally, the third section describes the FMIC developed by KSAU-HS to govern the MI.



Table 1: Medical Colleges in Saudi Arabia

	University	City	Year established	Sector
1	King Saud University*	Riyadh	1967	Government
2	King Saud bin Abdulaziz For Health Sciences University*	Riyadh	2004	Government
3	King Fahad Medical City	Riyadh	2004	Government
4	Al-Imam Muhammad ibn Saud Islamic University	Riyadh	2008	Government
5	Al-Faisal University	Riyadh	2008	Private
6	Al-Marifa College of Medicine	Riyadh	2009	Private
7	King Abdulaziz University*	Jeddah	1975	Government
8	King Saud bin Abdulaziz For Health Sciences University	Jeddah	2009	Government
9	Ibn Sina National College for Medical Studies	Jeddah	2004	Private
10	The Batterjee Medical College's	Jeddah	2006	Private
11	University of Dammam*	Dammam	1975	Government
12	King Khalid University*	Abha	1982	Government
13	Umm Al-Qura University*	Mecca	1996	Government
14	Qassim University*	Buraidah	2000	Government
15	Taibah University*	Al-Madinah	2001	Government
16	King Faisal University*	Al-Ahsa	2001	Government
17	Jazan University*	Jazan	2005	Government
18	Taif University*	Taif	2006	Government
19	Al-Jouf University	Al-Jouf	2007	Government
20	Najran University	Najran	2007	Government
21	University of Tabuk	Tabuk	2007	Government
22	Al-Kharj University	Kharj	2008	Government
23	King Abdulaziz University	Rabbeh	2008	Government
24	Northern Borders University	Arrar	2009	Government
25	Baha University	Baha	2009	Government
26	Ha'il University	Ha'il	2009	Government
27	Al-Rajhi College of Medicine	Qassim	2009	Private

* Colleges that graduated students by the end of academic years 2008/2009

Recent Developments and International Experiences

The medical internship was introduced in the UK by the Goodenough Committee in 1944 with the assumption that the MI would play an essential educational role providing opportunities for personal study and supervision^{1,12}. Over the years, heavy clinical duties required of interns and the lack of an established MI curriculum structure and management have adversely affected the quality of the MI¹³⁻¹⁵. On both sides of the Atlantic, management of MI training has become complex as the rules applied by the organizing bodies of the various countries have varied. Recently, the Institute for International Medical Education in the USA has articulated the Global Minimum Essential Requirements expected in the teaching of all physicians regardless of country¹¹. The requirements were drawn from various standards for medicine's basic sciences and learners' expected knowledge, clinical experiences, skills, professional values, behavior and ethical values. Assessment tools were designed to address these educational requirements¹¹. Furthermore, these essential requirements for the MI matched those developed for undergraduate curricula and further supported the available frameworks for the training of interns and junior doctors. Global Minimum Essential Requirements is a continuum of the SPICES (student-centered, problem-based, integrated, community-based, elective and systematic model) model for undergraduate education¹⁶.



United States of America: In the USA, the traditional rotating MI is designed for graduates who are undecided about their future career directions and for those enrolled in the few postgraduate programs that still require a general rotating MI (e.g., neurology)¹⁷. The term “internship” is not commonly used in the USA, as for most specialties the MI is now embedded in the first postgraduate year (PGY1) of residency. The governing bodies for different specialties set the standards to assess their trainees during the PGY1 year on a variety of expected competencies that include the areas of patient care, medical knowledge, practice-based learning and improvement, interpersonal skills and communication, and professionalism^{3,18-20}. The assessment tools are designed at the level of postgraduate specialties that prepare doctors for a consultant level. Moreover, passing the United States Medical License Examination (USMLE) is a requirement to practice in the USA. The USMLE is a three-step examination with the third step taken during the PGY1 year, designed to judge a doctor’s ability to apply knowledge and patient-centered skills to provide safe patient care²¹.

Canada: In 1992, Canadian universities were given responsibility for providing postgraduate training and the MI was abolished^{4,22}. The PGY1 year now serves the purpose of an MI. The Royal College of Physicians and Surgeons of Canada created CanMEDS, which is a competency-based framework aimed at yielding optimal and safe patient outcomes⁴. This framework identifies seven roles for the physician around the central integrative role of medical expert (Table 2)²³⁻²⁵. The CanMEDS framework does not describe how the teaching or assessment of junior doctors is to be operationalized; therefore, each university customizes training to their particular setting. International graduates must pass the Medical Council of Canada Evaluating Examination to be eligible for enrollment in Canadian postgraduate training programs and are expected to spend one year as a PGY1.

Table 2: CanMEDS Seven Physician Roles

The Seven Roles	Description
Medical Experts	Applying medical knowledge, clinical skills, and professional attitudes in the provision of patient-centered care
Communicators	Facilitating effective doctor-patient relationship
Collaborators	Achieves optimal patient care by effective work within a healthcare team
Managers	Participating in healthcare organizations and contributing to the effectiveness of the healthcare system
Health Advocates	Influencing advancement of health and well-being of individual patients, communities, and populations
Scholars	Demonstrating a lifelong commitment to reflective learning as well as the creation, dissemination, application and translation of medical knowledge.
Professionals	Applying ethical practice, profession-led regulation, and high personal standards of behavior.
Adopted from CanMEDS [4]	



United Kingdom: In the UK, a two-year foundation program was introduced in 2005 to ensure that new graduates are equipped with the skills, attitudes, and aptitudes to start their practice or postgraduate training⁵. The foundation program was structured around competencies in the following domains: good medical practice, teaching and training, relationship with patients and communication skills, working with colleagues, and professional behavior. It contains tools for learner assessment and mentoring. An education portfolio was also introduced to ensure that junior doctors apply practice-based learning and are assessed within the framework of a competency-based curriculum. Moreover, the Postgraduate Medical Education and Training Board (PMETB) has recently published a report on future models of medical training²⁶. This report actively promotes the value of high quality training and recommends that interns gradually take on more responsibility for patient care by progressing from being supervised to independence⁸. All domains mentioned in the foundation program are well-addressed in the PMETB report

Australia: Prevocational training in Australia typically spans up to three years. It is considered a bridge from medical undergraduate to vocational training²⁷. The MI constitutes the first year of prevocational training when the trainee is given limited responsibilities to allow for proper supervision. International graduates must pass the Australian Medical Council's written exams prior to engaging in this training. Prevocational trainees follow the Australian Curriculum Framework for Junior Doctors, an educational template that identifies the core competencies and capabilities necessary to provide safe patient care⁶. This framework covers three principal areas: clinical management, communication, and professionalism. Each area is subdivided into categories, topics, and capabilities; the latter describes knowledge, skills and attitudes required of a physician. The Curriculum Framework focuses on practice-based learning and currently lacks specific assessment tools such as those outlined in the foundation program of UK.

As evident in the previous description, the structure of the MI varies from country to country. In North America, PGY1 serves the role of the traditional MI for nearly all postgraduate residency programs, with specific placements designated by each specialty. This obliges trainees to choose their specialties as they finish their undergraduate education but then shortens the time spent in subspecialty training^{3,4}. In the UK and Australian the MI is embedded within the training of junior doctors. Once trainees have completed this period, they proceed to their specialty or vocational training, possibly then followed by subspecialty or advanced vocational training. The UK and Australian experience allows trainees to decide on their future career choice during the period of their junior doctor training^{5,6}.

Current Situation of the Medical Internship in the Kingdom of Saudi Arabia

Among the 27 medical schools in KSA, 11 had graduated doctors by the end of 2008-2009 academic year and 17 were still under construction or had not yet graduated their first class of students (Table 1). Based on the KSA's Council of Higher Education's rules and regulations, the traditional MI is still conducted for a period of twelve months. It is considered a prerequisite for receiving the final certificate, which precedes physicians' next steps of either obtaining a license and beginning a medical practice or enrolling in a postgraduate training program. Since the first medical school in KSA matriculated its first students in 1969, the MI has been developed with limited collaboration and coordination among stakeholders. As there is no assigned governing body, each medical college has developed its own MI policies and procedures²⁸. Medical colleges are under the umbrella of the Ministry of Higher Education and obey the rules and regulations of the Council of Higher Education. As there are no written national guidelines for the MI, there is no standardization of objectives, placements, nor learner assessment and program evaluation²⁹. This has yielded a lack of uniformity in placements and their duration, and in assessment tools used for the graduates of each university. Although each intern rotates in Internal Medicine, Surgery, Pediatrics, and Obstetrics-Gynecology, the time spent in each placement is not standardized across medical schools. As part of the government commitment toward the Alma-Ata Declaration,



Family Medicine rotations were introduced in several universities in the 1980s^{30,31}. Apart from this particular rotation, there are a wide range of other specialties and rotations offered to the interns of the various universities³².

Education leaders generally believe that the medical internship year should be a continuity of the SPICES model for undergraduate curriculum in preparing trainees for enrollment in postgraduate study or for licensing to practice medicine^{11,16}. A recent study addressed the compliance of medical schools in the Gulf Cooperation Council countries with the SPICES model for undergraduate curricula³³. This study included thirteen medical schools in the KSA, of which seven had a traditional curriculum and six had adopted Problem-based Learning (PBL). Schools differed in how well they conformed to the SPICES model: some conformed closely to the model whereas others showed little compliance. Therefore, challenges are expected when it comes to applying innovative teaching approaches during the MI in some hospitals in KSA due to the lack of proper requisite conditions, like well-qualified faculty, faculty enhancement programs, and an innovation-oriented academic environment.

Globally, medical interns consider MI the first step in their future career as they start taking responsibility for patient care and gaining clinical experience³⁴. However, various factors have been shown to influence the quality of their training, such as the ability to achieve planned objectives, their faculty's willingness to teach, the existence of national standards established by governing bodies, and the availability of needed support and resources^{8,35}. With the opening of more medical schools in the KSA, there is a growing concern about the availability of sufficient numbers of training slots. This may lead some medical schools to offer MI placements in hospitals not accredited for training. The Saudi Commission for Health Specialties typically accredits hospitals sponsoring postgraduate training programs. In geographic areas of Saudi Arabia that do not have teaching hospitals, new medical schools will need to ensure the creation of appropriate learning environments for teaching and training.

What we learn from the analysis of the MI in the KSA is, first, that there is a need for more structure, expressed through a clearly articulated, competency-based curriculum and shared standards, and the availability of appropriate placements. Second, we learn that there is room for improvement in the processes that favor learning during the MI. Improving the structure and educational approaches for the MI in KSA will require a national dialogue for the governance of medical interns' education.

The Framework for Medical Interns' Competencies

The Framework for Medical Interns' Competencies is an educational template created within the KSAU-HS with the objective of outlining the knowledge, skills, and attitudes required of medical interns to ensure that they gradually gain sufficient ability and confidence to be responsible for safe patient care. Based on the KSAU-HS rules and regulations for the MI, the FMIC was constructed to follow the aforementioned international standards and frameworks. The FMIC was constructed around the domains of clinical management, medical practice, professionalism, and communication skills; a continuum of the learning objectives that students are to achieve during medical school. The College of Medicine adopted a web-based hybrid PBL curriculum that is constructed around the themes of basic medical sciences (PBL and lectures), patient-doctor interactions, community-doctor interactions, personal-professional development, and evidence-based medicine. This integrated curriculum facilitates the transition of medical students to postgraduate training through the MI³⁶.

The FMIC includes placements, assignments, assessment tools, educational portfolios, and necessary forms. It also highlights the importance of planning for personal professional development, the principles of clinical governance, and patient safety. The FMIC is a competency and performance-based curriculum³⁷. By the end of the MI period, the intern is expected to: manage diseases by applying integrated basic medical and clinical sciences effectively in safe patient care; manage clinical problems by



complementing healthcare with disease prevention; be an effective team member and know when to ask for opinions from senior colleagues; apply principles of professionalism in dealing with patients and their families; effectively apply the tools of communication, presentation, leadership, and clinical governance; and be a life-long learner.

Assessment is a major component of the FMIC. Interns are assessed against standards of competencies required of a first-year resident in any specialty. Assessment within the FMIC is based on the set of expected competencies and practice outcomes covering the domains of clinical management, medical practice, professionalism, and communication skills. Twenty competencies are included in the end-of-month summative assessment of each student’s performance (Table 3). Evidence of immediate feedback is included at the end of the assessment form to ensure that the intern benefits from the MI. The end-of-year assessment is weighted according to the duration assigned for each specialty.

Table 3: Competencies addressed in the monthly, end-of-placement assessments during the internship period at the King Saud bin Abdulaziz University for Health Sciences

Clinical Management	
1	Acquires clinical knowledge
2	Takes history and performs physical examination
3	Constructs differential diagnosis
4	Plans appropriate investigation and management
5	Applies SOAP in follow-up of patients
6	Maintains quality medical records
7	Recognizes and assesses acutely ill patients
Medical Practice	
8	Demonstrates evidence of self-learning
9	Gives comprehensive case presentation
10	Provides appropriate patient instructions
11	Maintains regular attendance
12	Demonstrates required technical skills
Professionalism	
13	Manages time appropriately
14	Practices the principles of patient safety
15	Applies principles of medical ethics
16	Demonstrates self-confidence
17	Acknowledges own limitations and seeks assistance when appropriate
Communication Skills	
18	Maintains professional practice
19	Communicates with other staff and works effectively within the team
20	Demonstrates good communication with patient and family

An educational portfolio was introduced to reflect students’ performance and, therefore, to assess their clinical competencies and professional development³⁸. The portfolio contains a collection of reflective statements with self-appraisal, mandatory formative assessment (MFA), evidence of summative assessment, and a list of achievements that reflect the clinical experiences and new competencies acquired by the intern during the MI. The various assessment tools underpinning the FMIC are intended to be clinically-oriented, work-based, and address directly observable behaviors³⁹. These tools include the Mini Clinical Evaluation Exercise (Mini-CEX), Case-based Discussion (CBD), and Directly-observed Procedural Skills (DOPS) assessment. The Mini-CEX reflects the intern’s performance of clinical skills routinely considered part of clinical encounters, including taking a patient history and performing a physical examination⁴⁰. CBD is a tool to assess clinical judgment, decision-making, and the application of knowledge in relation to safe patient care^{41,42}. It allows interns to apply clinical reasoning in their practice, which can include



discussing ethical and legal frameworks of practice and may facilitate feedback. In the DOPS, interns are assessed in the basic procedural skills related to each placement⁴². The MFA is a unique component of FMIC that was intentionally made formative until the infrastructure is ready for wider implementation¹⁴. It is intended to allow the intern an opportunity to receive monthly, direct and immediate feedback from an experienced senior colleague.

Conclusion

Medical internship is a supervised period when interns are to develop their professional values and advance their knowledge, skills and attitudes. Two trends have been observed in the evolution of the MI internationally. In North America, the PGY1 year serves the purpose of the traditional MI for each postgraduate residency program, with specific placements designed by each specialty. The UK-Australian experience has embedded the MI within junior doctor training. Both approaches have developed clearly written, structured curricula but with variable levels of specification of the requirements for assessment and feedback to learners. Many other countries, however, still apply the traditional model of the MI and have not yet developed shared, innovative guidelines for the MI. With the increasing number of medical students in the KSA and elsewhere, there is a justifiable concern about the availability and quality of training posts. The KSA and other countries also face a lack of national standards and guidelines. There is an urgent need to initiate a national dialogue within the KSA to create a nationwide framework for the governance of medical interns' education and for the development of a shared outcome and competency-based framework for the MI. There is also a need to standardize interns' activities, working hours, placements, and training environments. The FMIC developed by the KSAU-HS could serve a basis for a nationwide framework.

The introduction of innovative methods will certainly bring challenges and generate resistance²⁵. To overcome expected resistance, authorities need to promote the value of education and encourage adoption of advanced educational approaches^{36,39}. Our experience developing and implementing the FMIC within the KSAU-HS can be a model for how to introduce initiatives aimed at improving the MI in other countries where medical education is also in its early stages.

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