

letters

The endangered clinician-investigator profession in Saudi Arabia: curricular attention is required

To the Editor: In today's 21st century, recruiting medical graduates into the largely underrepresented clinician-investigator (also known as physician-scientist) profession is a notable priority internationally,¹ and nationally in Saudi Arabia.^{2,3} Clinician-investigators are defined as practicing clinicians with medical degrees, who contribute clinical, teaching and administrative duties, but most importantly conduct biomedical research activities as their primary focused profession.^{1,4} The predominating bulk of clinician-investigators are dual-degree MD-PhD individuals. Characteristically, clinician-investigators have one leg in clinical practice (i.e., patient care) and one leg in scientific enquiry (i.e., academia and research), and hence are uniquely positioned to bridge basic sciences to clinical practice, and catalyze beneficial bench-to-bedside translational research.⁵ That being said, the role of non-clinician investigators (i.e., PhD scientists) in contributing valuable research should never be under-emphasized.

Medical schools play the most pivotal role in producing clinician-investigators, principally through well-crafted medical curricular designs. Formal training in scientific research, to a larger degree, is a must for a clinician-investigator profession. The formal research training can take place either concurrently during medical curriculum (i.e., completion of a dual-degree MD-PhD program), or after medical school graduation (i.e., completion of a stand-alone PhD graduate program).

Universally, dual-degree MD-PhD programs are well-acknowl-

edged as the curricula intended to steer the student towards the clinician-investigator professions.¹ In Saudi Arabia, unfortunately, similar MBBS-PhD curricula are not yet in effect despite the recent call for these programs, and recognition of the benefits of such programs.³ Current medical school curricula offer only the stand-alone MBBS programs, and they are not properly 'research-intensive' enough to warrant proficiency in scientific research by the medical graduates. Three thoughtful queries for investigation are raised here: [I] Do the Ministry of Education (MOE), Saudi Council of Medical Education (SCME) and medical schools really value dual-degree MBBS-PhD curricula as important? [II] In the absence of formal curricular research training, can well-designed auxiliary extracurricular research activities competently instill proficient scientific research training in medical students? And [III] most significantly, are medical students aware of this alternative career—clinician-investigator profession?

Medical students aspiring to the clinician-investigator profession must join stand-alone PhD graduate programs after graduation from medical school. Four plausible questions arise: [I] Are medical students well-prepared for transitioning into PhD postgraduate education in terms of career counselling, intellectual preparation and fulfilling admission requirements? [II] What are the medical student's perceived attitudes, motivators and barriers toward pursuing PhD postgraduate education? [III] Will medical students be interested in joining a 9-year-long dual-degree MBBS-PhD program as follows: 3 years of basic sciences (pre-clerkship years), followed by 3 years of PhD research dissertation, and followed by 3 years of clinical sciences (clerk-

ship years)? And [IV] will medical residents be interested in integrating an additional 2-year Masters or a 3-year PhD graduate education into the specialty-specific residency training? These are very substantial questions that have never been investigated and demand immediate exploration.

In Saudi Arabia, the movement toward MBBS-PhD curricula is, actually, in alignment with the 'doctor and research domain' highlighted in the Saudi Meds (a competence specification for Saudi medical graduates).⁶ The healthcare system cannot incur the conceivable waste of today's clinician-investigator workforces to contribute favorable bench-to-bedside translational enterprises. Moreover, medical students are yet to entertain the valued, despite underrepresented, clinician-investigator profession. To that end, until dual-degree MBBS-PhD programs are formally put into practice,³ I call for an official (mandatory/optional) inclusion of a year-long course titled: 'introduction to a clinician-investigator profession' into the final-year of medical school curriculum. This course is under review for implementation at the College of Medicine, Alfaisal University (Riyadh, Saudi Arabia). This course is anticipated to promote interest in, and pursuit of clinician-investigator professions. Generally, the course aims to:

- I. Highlight the importance of scholarly research in today's 21st century and its close interconnectedness to clinical practice and other healthcare disciplines such as pharmaceutical sciences.⁷
- II. Emphasize key translational bench-to-bedside discoveries by clinician-investigators, encourage scientific innovation, and promote useful transformation of basic science

concepts into applicably beneficial biomedical diagnostics and therapeutics discoveries.

- III. Provide 'formal' theoretical and practical (hands-on) training in all types of research including basic science (laboratory), clinical science (applied patient-focused) and epidemiological (population-oriented) research.
- IV. Offer a closely mentored research dissertation with a mandatory research publication requirement, so that students can envision life as quasi-scientists and experience the pleasures and rigors of scientific publishing.
- V. Provide career counseling in a clinician-investigator profession.
- VI. Extend comprehensive support services on transitioning into PhD graduate programs, in terms of 24/7 assistance, available opportunities, application process, general admission criteria, advantages and disadvantages.

In Saudi Arabia, although the absence of dual-degree MBBS-PhD programs is the major contributing factor to the endangered clinician-investigator phenomenon,^{2,3} attention should also be paid to other associated deterring factors. One such factor is low income: clinicians who spend most of their time doing research earn relatively less than their colleagues who do mainly clinical work only. As a result, the clinician-investigator profession may not be highly desired.¹ In the West, several mechanisms have been proposed to sustain and encourage a burgeoning generation of clinician-investigators.^{1,8} These mechanisms should be adopted and largely include: (I) increasing the number of dual-degree MD-PhD programs,

(II) better integration of both clinical and curricular/extracurricular research training in medical school curricula, (III) focusing and shortening the duration of research training, (IV) offering career counseling, networking and mentoring, (V) enhancing the research funding, job salaries and productivity incentives, and (VI) improving institutional aspects pertaining to faculty promotion and tenure-track policies.

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Ahmed Abu-Zaid, MBBS

From the College of Medicine, Alfaisal University, Riyadh, Saudi Arabia; College of Graduate Health Sciences, University of Tennessee Health Science Center, Memphis, Tennessee, United States

Correspondence:

Ahmed Abu-Zaid
College of Medicine
Alfaisal University
Riyadh 11533
M: +966 567566622
aabuzaid@live.com
ORCID: <http://orcid.org/0000-0003-2286-2181>

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