

Letter to the Editor

A Systems Thinking Approach for Creating Super Clinicians Using a Competency-based Medical Education Framework

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Dear Sir,

We think that the article titled “National Competency Frameworks for Medical Graduates: Is it Time for the “SudanMeds”?” published in the *Sudan Journal of Medical Sciences* [1] is a timely publication. Competency-based medical education (CBME) is considered as a paradigm shift in medical education, the ultimate aim of which is the improvement of patient and society’s quality of care by training and creating highly skilled clinicians. A paradigm as defined by the *Cambridge Dictionary* is a situation in which the usual and accepted way of doing or thinking about something changes completely. The magnitude of change is so profound to the extent that it leads to a fundamental change in the approach or underlying assumptions, an example being the introduction of the Internet. Several such major “contemporary” shifts have colored the thinking processes and actions of healthcare professionals and leaders. For example, the Patient Safety Paradigm and the Evidence-based Practice Paradigm.

The challenge of CBME in Sudan and the creation of a SudanMEDS (capitalized as per the CanMEDS counterpart-the Canadian Medical Education Directives for Specialists), is in its adaptation and adoption into the “system” of medical education. We hereby advocate for a Systems Thinking approach for the creation of highly skilled clinicians using a CBME framework or SudanMEDS.

Adaptation is the process of change by which the curricular content becomes better suited to Sudan’s healthcare needs thereby truly becoming a SudanMEDS framework. For example, the CanMEDS framework [2] has seven competency domains, namely the Medical Expert, Communicator, Collaborator, Scholar, Advocate, Leader, and Professional. Additions to better suit Sudan’s population health needs would entail adding extra domains such as Spirituality/Religious Beliefs competency domains. **The adoption** component, that is, its incorporation into the “system” of training necessitates a special approach, the so-called “Systems Thinking approach” – an approach advocated by the World Health Organization [3]. Systems Thinking is yet another paradigm shift

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TABLE 1: Proposed SudanMEDS Competency-based Training program Biomatrix elements and administrative actions

Biomatrix Item	Description	Administrative Component or Action
Aims (VISION)	The Outcome(s): the results that the system wants to achieve. Aims create focus.	Outcome-oriented
Ethos	Organizational Culture: its unique expectations and values and is expressed in its self-image- "As you think, so you will become."	Super-skilled
Structure	The Organogram: the anatomy of a system.	SudanMEDS Training Committee, Training Curriculum, Faculty Training Program, Educationalist, Simulation Lab., Monitoring & Assessment Unit
Process	The Activities: describes the activities of the system – the activities involved in the delivery of services (training) to the customers.	<ol style="list-style-type: none"> 1. SudanMEDS Induction Program for Faculty and first-year Trainees, Teachable Moments, Competency Presentations & Workshops, e.g., in the Communicator Role, Professionalism, etc. 2. Scholar Role activities: Such as Evidence-based Literature searching workshops in a computer lab. 3. Professional Role activities: Ethical Practice/Case Vignettes, Self-care, etc. 4. Leadership Role activities: For instance, Leadership Skills, Service Improvement skills (Quality and Safety Improvement Tools like Audit). 5. Communication Role activities: Written (H&P, Follow-up, Discharge Summaries, etc.), Patient-centered communication, Hand-over, Breaking-bad News, etc. 6. New Non-clinical Rotations: EBM Rotation, Research & Audit, Medical Technology, Medical Bioethics, Community Health, Medical Education, etc.
Resources	Material and Intellectual Assets: refer to the resources of the organization, such as its capital equipment, financial resources, intellectual property, staff capabilities, etc.	SudanMEDS Skilled Faculty, Audiovisual Resources, Case Vignettes, Website, Blogs, etc.
Environment	Local & Surrounding Facilitators & Barriers: (the latter need to be resolved at the outset).	<ol style="list-style-type: none"> 1. Incentive and Championship Program for Faculty and Trainees. 2. Simulation Lab. 3. Collaboration with Research Centers, Technology and Innovation Centers, Evidence-based Practice Centers, Quality Improvement Organizations, International Competency-based Training Programs, etc.
Governance	Regulation & Monitoring: The function of governance in an organization is to set aims and to monitor and regulate the movement of the organization toward the attainment of these aims.	Assessment Program for Faculty & Trainees.

in human thinking. It first appeared in the business and management arena but has spread to all disciplines or “systems” especially when the human factor is a pivotal element, for example, in social systems. It was first publicized by a Nobel prize winner, Professor Peter Senge in his book, *The Fifth Discipline* [4]. Systems Thinking as a foundational element together with Team Learning, Personal Mastery, Mental Models, and Building Shared Vision comprise the building blocks of the five disciplines of a successful learning organization. A critical component underscoring the success of the Systems Thinking approach is its focus on staff rather than the service, the so-called System Intelligence.

A System is defined as an entity with interrelated and interdependent parts that are working together to achieve a common purpose. Anything that has a name qualifies as a system – be it a chair, a car, or a company. Any change in a part of the system, for instance, creation of a highly competent workforce, not only affects that particular but also the whole system. Healthcare is considered as a system with numerous structures and processes that are integrated to achieve wellness as an ultimate purpose. Systems Thinking is a holistic approach to better understand how the system elements interact with each other over time, the root causes of system defects, and the right approach for a highly effective problem-solving intervention. Systems Thinking facilitates an in-depth understanding of system dynamics. Its tools enable its users to redesign their systems and radically create the results they truly desire, thanks to a methodology for selecting and focusing on the right “high-leverage areas.” One of the tools for identifying and selecting high-leverage areas is called the Biomatrix Tool, a tool emanating from the science of the Biomatrix Systems Theory. Its seven components constitute the building blocks for any effective system, be it a clinical unit, department, hospital, organization, government, etc. Unlike the classic description of a System with its three basic components: The Structure, Process, and Outcome, the Biomatrix tool smartly incorporates four extra indispensable elements for a comprehensive and successful system design or redesign. One may thus utilize it to build a competency-based training program. Table 1 depicts the seven elements and their relevant practical administrative components or actions for a competency-based program. The CanMEDS committee in the Department of Medicine, King Abdulaziz Medical City in Riyadh, Saudi Arabia has endorsed all seven elements in its endeavor to energize and activate its competency-training program. A major and deterministic “leverage-point” for this program is purely administrative. The proposed SudanMEDS CBME framework, if adapted and adopted in the medical education arena, will undoubtedly revitalize, reshape, and modernize the

practice of medicine in Sudan. What is urgently needed is more than just “putting more pressure on the gas pedal.” It requires a shifting of gears.

References

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