Mobile Application For Competency-Based Medical Education

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Abstract- *Competency-based medical education (CBME) is gaining momentum across the globe. The Medical Council of India has described the basic competencies required of an Indian Medical Graduate and designed a competency-based module on attitudes and communication. Widespread adoption of a competency-based approach would mean a paradigm shift in the current approach to medical education. CBME, hence, needs to be reviewed for its usefulness and limitations in the Indian context. This article describes the rationale of CBME and provides an overview of its components, i.e., competency, trustable professional activity, and milestones. It elaborates how CBME could be implemented in an institute, in the context of basic sciences in general and pharmacology in particular. The promises and perils of CBME that need to be kept in mind to maximize its gains are described. The aim of imparting medical education is to train graduates to efficiently take care of the health needs of the society. The current medical education system is based on a curriculum that is subject-centered and time-based. Most evaluations are summative, with little opportunity for feedback. The teaching–learning activities and the assessment methods focus more on knowledge than on attitude and skills. Thus, graduates may have extraordinary knowledge, but may lack the basic clinical skills required in practice. In addition, they may also lack the soft skills related to communication, doctor–patient relationship, ethics, and professionalism.*

Keywords- Competency, Activity, Feedback, Assessment, Medical education Practice.

I. INTRODUCTION

Competency is an observable ability of a learner that integrates multiple components including knowledge, skills, values, and attitude which is desired in real life.Competency-based medical education (CBME) has been suggested and tried to tackle these concerns. Competency is defined as "the ability to do something successfully and efficiently" and CBME is an approach to ensure that the graduates develop the competencies required to fulfill the patients' needs in the society. It de-emphasizes time-based training and promises greater accountability, flexibility, and learner-centeredness.

This means that teaching–learning and assessment would focus on the development of competencies and would continue till the desired competency is achieved. The training would continue not for a fixed duration, but till the time the standard of desired competency is attained. Assessments would be frequent and formative in nature, and feedback would be inbuilt in the process of training. Furthermore, each student would be assessed by a measurable standard which is objective and independent of the performance of other students. Thus, it is an approach in which the focus of teaching–learning and assessment is on real-life medical practice.

II. OBJECTIVE

The concept of competency-based training began in the 1920s, when U.S. industry and businesses started researching ways of teaching their employees the specific knowledge and skills needed to create a specific product in a standardized manner. However, in the 1960s, a movement to de-emphasize basic skills in education arose. The resulting decline in traditional scores ofachievement eventually sparked a demand for the renewal of minimum standards and performance competencies.

The design of a competency-based system of education can be approached using the following steps:

- Identify the desired outcomes
- Define the level of performance for each competency
- Develop a framework for assessing competencies
- Evaluate the program on a continuous basis to be sure that the desired outcomes are being achieved

In 1999, the Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Medical Specialties (ABMS) endorsed six domains of core competencies, and the outcome initiative (the Outcome Project) was soon launched.

The six ACGME Core Competencies are:

1. Patient Care
2. Medical Knowledge
3. Professionalism
4. Interpersonal and Communication Skills
5. Practice-Based Learning and Improvement
6. Systems-Based Practice

Even though there was standardized language around the core competencies of medical education, there were still no standardized assessment methods to determine whether or not a learner had achieved all of the core competencies prior to completion of residency training. This deficiency ultimately led to the creation of milestones to operationalize and implement the competencies. These milestones described the performance levels residents and fellows are expected to demonstrate for skills, knowledge, and behaviors in the six clinical competency domains and are significant points in development that are unique to each specialty.

In 2014, the ACGME required the reporting of milestones as part of the Next Accreditation System (NAS) for all ACGME-accredited residency and fellowship programs. In undergraduate medical education, there are two AAMC-defined performance levels: novice performance and performance expected of a graduating MD. In graduate medical education, there are five performance levels for each competency: novice, advanced beginner, competent individual, proficient individual, and expert physician.

III. PROPOSED METHODOLOGY

The major changes included the listing of several competencies that an Indian Medical Graduate should possess at the end of training and some new components such as the Foundation course, Electives, Integrated learning, and early clinical exposure.

The efforts taken to create and consolidate a document of this nature must be lauded, and many changes suggested are progressive and welcome. For example, the provision of a foundation course lasting 1 month after admission to medical school but before the formal start of classes is a positive step probably borne out of realization that unlike Western countries, Indian medical aspirants are relatively younger and naive and need noncurricular support at the time of medical school entry. They are a nonuniform mix of multiple backgrounds, languages, levels of understanding, and schooling. Their abilities to cope up with the harsh realities of medical training are disparate; lack of vocational training and sensitization during primary and secondary education makes them vulnerable to indecisiveness and meandering away from their goals. The proposed foundation

course aims to orient the students to the medical course, its requirements, and how adult learning and self-directed learning differs from the way they have been learning at school and to provide support in the form of training in language, computer skills, stress management, and time management apart from an overview of professionalism and right attitudes.

IV. METHOD DESCRIPTION

Map competencies

All subjects have been classified three categories, namely

- pre- and para-clinical subjects,
- medicine and allied (include community medicine),
- surgery and allied.

To reconcile the subject based instruction with transition to CBE, subject-based outcomes (map competencies) have been derived and compiled by subject experts. Guidance on the domain, level of proficiency, essentiality, suggested TL and assessment methods, and recommended integration have been provided in three volume standalone document available on MCI website. A total of 412 topics with 2949 outcomes (map competencies) have been identified for the entire curriculum including 20 topics and 107 outcomes for the community medicine.

Alignment and integration classes for students

Alignment is temporal coordination of related topics in the same phase whereas the Integration refers where concepts in a topic that are similar (overlapping and related) are merged in a single class, and the subject-wise demarcations are removed. It also includes bringing the topics from different phases (vertical) to a particular phase for there inforcement/introduction. This will help bridge the gap between hospital-based and community-based medicine and between basic and laboratory services with clinical relevance. One-month, will be dedicated to orient new students about the teaching program, help them adapt, learn language (English and local language), computer use, communication skills, time management, handling stress as well as for sports and extra-curricular activities.

Clinical Activity

In order to provide clinical context and ensuring patient centricity, the student will be provided clinical exposure starting from 1st year itself. It shall focus on basic

science correlation, basic clinical andsoft skills, and humanities in medicine.

They have been introduced for flexible learning and providing opportunities for diverse learning experiences. It will be dedicated 2, 4 weeks blocks III MBBS part I examination wherein two projects will be undertaken one each from clinical learning and the basic subjects or community project or national health programs. During this period, students will be exposed also to the self-directed learning.

Training learning activity

Emphasis will be on student-centric (interactive and small groups) and interactive (problem-based, case-based, team-based) learning. Didactic lectures should not exceed one-third of total schedule. Learning in primary and secondary care settings, with a strong emphasis on prevention, national health priorities, and programs, will be encouraged. During the clinical phase, student doctor method of clinical training will be promoted. Students will be provided ample opportunities for self-directed learning.

Multifaceted assessments

Formative assessments in theory and practical/clinical work (internal marks) will have a minimum pass score (separately in theory and practical) as a prerequisite to appear in summative assessment (final exam). Viva marks shall be the part of practical/clinical assessment. Internal marks will not contribute to the university (final examination). A provision has been made for assessment of skills and AETCOM competencies. Formative assessment will be streamlined with an emphasis on continuous assessment through logbooks and reports.

In the summative assessment (university examination), questions shall be of different types such as long answer questions, short answer questions, and MCQ – not more than 20% of total theory marks. Students shall qualify separately in both theory and practical to pass. There will be one main examination in an academic year, with dedicated time appropriated in the schedule and a supplementary examination within 90 days of declaration of result of the main examination.

V. FUTURE of CBME

The MCI has been intent in gently moving toward a competency-based curriculum as described in its Vision 2015 document.However, to maximize the gains of CBME, a hybrid approach has been suggested wherein CBME should be inbuilt in the tenets of the conventional curriculum in the initial phases of the change, and then the conventional curriculum could be gradually replaced by CBME. This would ensure that the stakeholders would not be overwhelmed by a sudden change, while also providing an opportunity to measure and analyze the benefits of CBME.

The way we design and implement CBME would matter a lot for its success. If the principles of CBME are implemented as per the regional context and circumstances, we may reap the fruits. Initial employment of a hybrid curriculum-part traditional and part CBME - would make the transition more acceptable.

VI. CONCLUSION

The shift to CBME was an important transition that allowed residents and fellows to be active agents in their own learning by comparing their milestone assessment and feedback data to their personal learning plans. However, the future of CBME is just being realized and offers many exciting opportunities moving forward.

REFERENCES

[1] Soanes C, Stevenson A, editors. *The Oxford Dictionary of English.* Revised Edition. Oxford, UK: Oxford University Press; 2005. [Google Scholar]

[2] Frank JR, Mungroo R, Ahmad Y, Wang M, De Rossi S, Horsley T. Toward a definition of competency-based education in medicine: A systematic review of published definitions. *Med Teach.* 2010; 32: 631–7. [PubMed] [Google Scholar]

[3] Swing SR. The ACGME outcome project: Retrospective and prospective. *Med Teach.* 2007;29:648–54. [PubMed] [Google Scholar]

[4] General Medical Council. *Tomorrow's Doctors: Education Outcomes and Standards for Undergraduate Medical Education.* [Last accessed on 2016 May 16]. Available from: http://www.gmc-uk.org/Tomorrow_s_Doctors_1214.pdf_48905759.pdf .

[5] Frank JR, Danoff D. The CanMEDS initiative: Implementing an outcomes-based framework of physician competencies. *Med Teach.* 2007;29:642–7. [PubMed] [Google Scholar]

[6] *Medical Council of India Regulations on Graduate Medical Education.* 1997. [Last accessed on 2016 May 16]. Available from: http://www.mciindia.org/Rules-and-Regulation/GME_REGULATIONS.pdf .

[7] Ten Cate O. Nuts and bolts of entrustable professional activities. *J Grad Med Educ.* 2013;5:157–8. [PMC free article] [PubMed] [Google Scholar]

[8] ten Cate O, Scheele F. Competency-based postgraduate training: Can we bridge the gap between theory and clinical practice? *Acad Med.* 2007;82:542–7. [PubMed] [Google Scholar]

[9] Batalden P, Leach D, Swing S, Dreyfus H, Dreyfus S. General competencies and accreditation in graduate medical education. *Health Aff (Millwood)* 2002;21:103–11. [PubMed] [Google Scholar]

[10] Dhaliwal U, Gupta P, Singh T. Entrustable professional activities: Teaching and assessing clinical competence. *Indian Pediatr.* 2015;52:591–7. [PubMed] [Google Scholar]