

## Medical education – Competency Based Medical Education - How far, how near - moving from Rote learning to Artificial Intelligence – Part 2 - Preparing learners to meet future changes and challenges

N.K. Gupta<sup>1\*</sup> and Uma Gupta<sup>2</sup>

<sup>1</sup>Department of General Surgery, Hind Institute of Medical Sciences, Thasil: Sidhauri, Dist: Sitapur-261303 Uttar Pradesh, India and <sup>2</sup>Department of Obstetrics & Gynecology, Era's Lucknow Medical College, Sarfarazganj, Hardoi Road, Lucknow-226003, Uttar Pradesh, India

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### Introduction

In continuation with the last manuscript discussed Medical education – competency based medical education - how far, how near - moving from rote learning to artificial intelligence Part-1 [1].

Let us now discuss ways and means to prepare our learners to face changes and challenges.

First, we will discuss about current challenges and future changes and challenges facing and will face are as stated below.

1. Academic standards in primary, Junior High school, high school, and intermediate studies – not same in all institutions so creates wide and big diversity of learners who join medical profession. This is apart from slow learners and fast learners - attending the same class and same assessment procedure. This is a big hurdle in achieving competence based medical education. In most medical colleges, no remedial measures are used to solve this diversity and disparity, one reason being lack of resources and watertight schedule, leaving hardly any time for this activity and with time, in most cases things do not improve [2].
2. Problems of language – as primary education and education onwards is in local language or simple English language which does not match with needs of English of medical subjects. Speaking English is another problem area, during examinations. Most institutions face the same problem as stated above. New education policy may solve some problems. It also hampers communication with patients and other workers involved in the medical profession, when moving from one state to another [3].
3. Social, cultural, and economic diversity – relevant in a country like India, leading to inferiority complex, attention diversion and involvement in non-academic activities, in many students which again affects their learning. This is a real problem to achieve objectives of CBME. There are multiple media reports in support of these issues.
4. Purpose and objective of joining medical profession – it is another factor which restricts actual workforce as they will not be joining medical profession and practice – In our country it is significant number considering shortage of doctors and limited resources [4-5].
5. Current approach in medicine focuses on – Evidence based medicine, contemporary approach and precision medicine – it may not be feasible/available when required but health and medical professionals have to face consequences in real life.
6. As the saying stays true today also – “Prevention is better than cure” so focus is on preventive medicine, both at individual and community level.

7. Emerging diseases – new diseases with variants and mutants, old diseases appearing and new presentations of diseases. Same is true for emerging technologies for diagnosis, treatment, monitoring, follow up, patient education and predicting prognosis, relapse and recurrence. New fungal infections have become medical emergencies in many parts of world – named FUNGAL PRIORITIES.
  8. Achieving sustainable development goals in health and medical field.
  9. Facing extremes of weather – hot and cold conditions, their adverse effects on society, floods, famines, earthquakes, volcano eruptions, cyclones and changes in flora and fauna. Droughts, floods, and tsunami add to woes. Changes in seasons will affect disease patterns and will need re-orientation of medical and health services. climate-driven crises and other emergencies
  10. New epidemics may appear in the future.
  11. Human conflicts – terrorist activities, bioterrorism, Chemical weapons and atomic explosions – strategic wars as in Ukraine and Russia or by other means.
  12. Scarcity of potable water, sanitation, energy, food and hygiene will be other issues in future.
  13. Mental health in this adverse condition will be another major issue, will need urgent and need of professionals.
  14. Lifestyle diseases will add another big problem as old age populations will be big number, world over
  15. There will be evolution of smart instruments and equipments and hospital infrastructure.
  16. Environment friendly practices – Green Practices
  17. Role of artificial intelligence
  18. Use of media, social media for patient and with patients and stakeholders
  19. Predictive care using artificial intelligence.
  20. Real time – real results
  21. Use of metacognition to avoid clinical errors.
  22. Practice of professionalism, ethics, empathy, and communication
  23. Multidisciplinary, multi-institutional and multi-organizational approach – working with others – Teamwork.
  24. Mentoring, training and learning programs – need based and target group orientation.
  25. Discussion, transparency, and honesty – accepting and correcting errors
  26. Moving forward – feedbacks, reflections, doing research to find feasible solutions, cost effective, easy to execute and easy to understand, easy to apply in given situations by the manpower available at local level, meeting expectations of local workforce.
- Bottom line is:**
1. Before starting, conceiving, planning and advocating competency based medical education, comprehensive feasibility studies MUST have been done in various regions and states to know educational standards at primary school, Junior, High school and intermediate levels as medical education is costly and involves prime time of life.
  2. Must have studied Document Vision 2015 which pointed out many issues.
  3. Must have gone through thousands and thousands inspection reports almost over 25 years and repeatedly pointed out improvements.
  4. Must have collected information about faculty available in country and willing to work in medical colleges – for various reasons good number is not interested in teaching jobs and/or working in disciplined frame of medical colleges [6-7].
  5. Never assessed competence of teachers' and faculties
  6. Never assessed patient's workload required for teaching and training.

7. No assessment of students done – physical and mental status to assess capacity to learn so many subjects at a time and long working and learning hours.

It seems that some great intellectuals saw a dream, had menthes and burdened already fragile medical education with CBME.

Only matter of satisfaction is that some beginning has bee done and may be in next 25-50 years, we may achieve it beyond paper records/data.

Even with available resources, an attempt will be made to solve some problems and issues in next article.

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\***About the author:** Dr. N.K. Gupta is a noted expert in General Surgery at Hind Institute of Medical Sciences, Thasil: Sidhauili, Dist: Sitapur-261303 Uttar Pradesh, India. He can be accessible by E-mail: [drnkgupta2000@gmail.com](mailto:drnkgupta2000@gmail.com)