INTRODUCTION

The Undergraduate Medical education curriculum in India is revised to competency-based Competency-Based Medical Education (CBME) as per Graduate Medical Education (amendment 2019) from 2019 – 20 onwards. This manuscript suggest a Competency-Based Medical Education (CBME) Roll out model that can aid Medical Institutes across India to plan and implement this revised curriculum. The Model suggests formulation of various relevant committees, their terms of reference, Phases of roll out (Planning, implementation, Monitoring, Evaluation and Amendment) and GANTT chart. Implementation of reforms in a phasic manner with capacity building at relevant intervals, as suggested in the model, will provide a steady foundation to the revised curriculum and will ease the process of change.

Key Words: Competency-Based Medical Education, Indian Medical Graduate, Ethics and Communication.

ABSTRACT

The Undergraduate Medical education curriculum in India is revised to competency-based Competency-Based Medical Education (CBME) as per Graduate Medical Education (amendment 2019) from 2019 – 20 onwards. This manuscript suggests a Competency-Based Medical Education (CBME) Roll out model that can aid Medical Institutes across India to plan and implement this revised curriculum. The Model suggests formulation of various relevant committees, their terms of reference, Phases of roll out (Planning, implementation, Monitoring, Evaluation and Amendment) and GANTT chart. Implementation of reforms in a phasic manner with capacity building at relevant intervals, as suggested in the model, will provide a steady foundation to the revised curriculum and will ease the process of change.

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dination of three significant committees viz. 1. Departmental Curriculum Committee (DCC), 2. College Curriculum Committee (CCC) and 3. Expert Group (EG).

The Composition of the three committees is proposed as under:

a. Departmental Curriculum committee (DCC): The DCC committee must consist of three members who have undergone training in MCI recognized Basic course workshop and Curriculum Implementation and Support program (CISP).

Table 1: Departmental curriculum committee

| Sr. No | DCC composition | Role |
|--------|-----------------|------|
| 1.     | Head of Department | Chairman, DCC |
| 2.     | Professor/Associate Professor | AIT (Alignment and Integration) in-charge |
| 3.     | Associate / Assistant Professor | Member |

b. College Curriculum Committee (CCC): The College Curriculum Committee must consist of six members, in accordance with BOGs, MCI guidelines as stated below:

Table 2: College curriculum committee

| Sr. No | Designation                      | Representation     |
|--------|---------------------------------|--------------------|
| 1.     | Dean of the Institute           | Chairman           |
| 2.     | Professor, Preclinical          | Preclinical        |
| 3.     | Professor, Para clinical        | Para clinical      |
| 4.     | Professor, Medicine and allied  | Medicine and allied |
| 5.     | Professor, Surgery and allied   | Surgery and allied |
| 6.     | Head, Medical Education unit (MEU) | MEU               |

c. Expert group (EG): Four expert groups viz. 1. Alignment Integration and ECE, 2. Assessment, 3. Skills and 4. Electives must be formed. Each expert group can consist of five members, each of whom have undergone training in MCI recognized Basic/revised basic course in Medical Education, Curriculum Implementation and Support Program and Advance course in ME/MPhil HPE. Each group must have a Co-convener and a member of CCC. The overall in-charge of the expert groups must be MEU co-coordinator. Each expert group will be responsible for operational monitoring and need based capacity building with regards to COMPETENCY-BASED MEDICAL EDUCATION (CBME). The terms of reference of various committees are identified in table no 3.

Table 3: Terms of reference of various committees

| Name of the committee | Departmental curriculum committee (DCC) | College curriculum committee (CCC) | Expert group (EG) |
|-----------------------|----------------------------------------|-----------------------------------|-------------------|
| Purpose               | Implementation of the COMPETENCY-BASED MEDICAL EDUCATION (CBME) in each subject | Overall in-charge of curricular delivery | Operational monitoring and capacity building |
| Scope                 | 1. Alignment and integration            | 1. Oversight and support of the curricular program | 1. Monitoring of implementation of COMPETENCY-BASED MEDICAL EDUCATION (CBME) w.r.t Alignment, Integration, ascendency of competencies, ECE, Skill teaching, Electives and assessment. |
|                       | 2. Develop learning and assessment methods for each subject and phase | 2. Necessary authority and support for the implementation of the curriculum | 2. Training and capacity building of faculty as and when required |
|                       | 3. Prepare timetable for the phase      | 3. Preparation of reports etc. as required by the Medical Council of India | |
|                       | 4. Obtain feedback and provides student support | | |
| Meeting               | Fortnight                               | Monthly                          | Monthly           |
| Reporting             | To CCC and EG                           | To College council               | To College council |
ii. Phases of Roll-out:
As mentioned in earlier paragraphs, the various reforms must be rolled out in five phases, as stated below;

Figure 1: Phases of Competency-Based Medical Education (CBME) Rollout Plan, JNMC.

1: Planning phase
The first step to sustainable curricular reform is proper planning. The entire rollout plan must be planned with respect to desired tasks at hand, timeline and responsibility. Planning phase begins from the year of launch of first professional year with new curriculum and must continue prospectively for forthcoming professional years viz Professional year II, III and VI.

The planning phase comprises of two parallel levels of operation as depicted below;

Figure 2: Series of events during planning phase of Competency-Based Medical Education (CBME).

The tables 1-4 gives operational details during planning phase for I<sup>st</sup> – IV<sup>th</sup> professional year, for the new curriculum launched in 2019 academic year, under the sections of Blueprinting and Capacity building.

| Planning Phase | First Professional Year |
|----------------|-------------------------|
| a. Blueprinting | **Tasks** | **Responsibility** | **Timeline** |
| Time Table | Time table committee | 20<sup>th</sup> April'19 |
| Foundation course module | Foundation course task group | May 2019 |
| ECE Module | AI and ECE Expert subgroup and DCC | July 2019 |
| Alignment and integration module | | |
| Formative assessment module | Assessment Expert sub-group | July 2019 |
| Log book | Respective expert sub-group | July 2019 |
| Aligned LRM | JNMC task group | May 2019 |
| b. Capacity Building | In house CISP for Expert group | Convener and Co-conveners | Feb 2019 |
| Orientation of HODs | Convener | March 2019 (in College council) |
| Sensitization of DCC (35%) – for mapping competencies with objectives and Time table committee | Expert group | April 2019 |
| In house CISP (MCI recognized) | Expert group | June’ 2019 onwards |
Table 5: Plan of Competency-Based Medical Education (CBME) for MBBS 2\textsuperscript{nd} Professional Year

| Planning Phase | Tasks                                                                 | Responsibility                                                                 | Timeline     |
|----------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------|
| 2\textsuperscript{nd} Professional Year | Blueprinting | Time Table | Time table committee | July’20 |
| | | Alignment and integration module | AI and ECE Expert sub-group and DCC | November 2019 |
| | | Clinical skill training module – 2\textsuperscript{nd} Prof | Skill – Expert sub-group and DCC | Dec 2019 |
| | | Formative assessment module for 2\textsuperscript{nd} Prof | Assessment Expert sub-group | Dec 2019 |
| | | Log book | Respective expert sub-group | Dec 2019 |
| | | Aligned LRM | JNMC task group | Feb 2020 |
| | Capacity Building | Sensitization of remaining faculty (35%) – for mapping competencies with objectives | Expert group | Sept 2019 |
| | | In house CISP (MCI recognized) for sensitized faculty | Expert group | Two CISPs in 2019-20 |

Table 6: Plan of Competency-Based Medical Education (CBME) for MBBS III\textsuperscript{rd} Professional Year

| Planning Phase | Tasks                                                                 | Responsibility                                                                 | Timeline     |
|----------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------|
| Third Professional Year | Blueprinting | Time Table | Time table committee | Before 1\textsuperscript{st} August’21 |
| | | Alignment and integration module | AI and ECE Expert sub-group and DCC | March 2020 |
| | | Electives module | Electives Expert sub-group | Dec 2020 |
| | | Clinical skill training module – 3\textsuperscript{rd} Prof | Skill – Expert sub-group and DCC | June 2020 |
| | | Formative assessment module for third first | Assessment Expert sub-group | July 2020 |
| | | Log book | Respective expert sub-group | July 2020 |
| | | Aligned LRM | JNMC task group | Oct 2020 |
| | Capacity Building | Sensitization of remaining faculty (35%) | Expert group | June 2020 |
| | | In house CISP (MCI recognized) for sensitized DCC | Expert group | 2 CISPs in 2020-21 academic year |

Table 7: Plan of Competency-Based Medical Education (CBME) for MBBS IV\textsuperscript{th} Professional Year

| Planning Phase | Tasks                                                                 | Responsibility                                                                 | Timeline     |
|----------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------|
| Final Professional Year | Blueprinting | Time Table | Time table committee | Before 1\textsuperscript{st} November ’22 |
| | | Alignment and integration module | AI and ECE Expert sub-group | July 2020 |
| | | Clinical skill training module – Final Prof | Skill – Expert sub-group | Sept 2020 |
| | | Formative assessment module | Assessment Expert sub-group | Oct 2020 |
| | | Aligned LRM | JNMC task group | Oct 2020 |
| | | Log book | Respective expert sub-group | Oct 2020 |
| | Capacity Building | In house CISP for Expert group | Convener and Co-convener | Feb 2019 |
| | | Orientation of HODs | Convener | March 2019 (in College council) |
| | | In house CISP (MCI recognized) for sensitized DCC | Expert group | 2 CISPs in 2021-22 academic year |
2. **Implementation phase:** Implementation of Competency-Based Medical Education (CBME) must be done prospectively and routed through Dean of the Institute and departmental curriculum committee headed by Head of Department. Need based capacity building must be taken up by Expert group as and when required.

*Report:* DCC must submit the report of Competency-Based Medical Education (CBME) implementation to CCC on quarterly basis. The compiled quarterly reports must be submitted to Medical Education Unit on annual basis which should be later submitted to Regulatory body for compliance.

3. **Monitoring Phase:**

The monitoring will be done at two levels, as stated below:

1. Mechanical monitoring: DCC
2. Operational monitoring: Expert group

It is proposed that DCC must meet fortnightly to discuss implementation of Competency-Based Medical Education (CBME) at the departmental level. The monthly report from DCC must be submitted to CCC. The CCC and expert group meetings should be held monthly to review the reports of DCC to ensure smooth implementation, necessary amendments, and relevant observations. The minutes of this monthly meeting must be itemized in the monthly college council meetings. This will enable formative evaluation of COMPETENCY-BASED MEDICAL EDUCATION (CBME) and allow intermediate corrections during the course. The same will be reviewed in quarterly joint college council meetings.

4. **Evaluation Phase:** The entire roll out plan must be evaluated (formatively and summatively) by Internal Quality Assurance Cell (IQAC), as per the indicators identified in the planning and implementation phase.

5. **Amendment Phase:** The observations and suggestions of IQAC must be incorporated and aligned planning should be done before implementation.

### iii. COMPETENCY-BASED MEDICAL EDUCATION (CBME) Roll-out Time line:

The entire roll out plan must have well defined deliverables with dedicated timeline as depicted in the GANTT chart for the COMPETENCY-BASED MEDICAL EDUCATION (CBME) launch in 2019 academic year.

| Sr. no | Phase | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 | 2024-25 |
|--------|-------|--------|--------|--------|--------|--------|--------|
| 1      | Planning Prof 1 | Modules : Foundation course | ECE Alignment and Formative integration assessment | Prof 1 : Aligned LRM | | | |
| 2      | Planning Prof 2 | Modules : Alignment and integration, Clinical skill training, Formative assessment, Log book | Prof 2 : Aligned LRM | | | | |
| 3      | Planning Prof 3 | Alignment and integration module | | Modules : Electives, Clinical skill training, Formative assessment, Log book | Phase 1 : Prof 3: Aligned LRM | | |

*Figure 3:* Monitoring mechanism for Competency-Based Medical Education (CBME) implementation.
Srivastava et al.: Transition to competency-based medical education: a proposed rollout model

### Table 8: (Continued)

| Sr. no | Phase                  | 2019-20                                                                 | 2020-21                                                                 | 2021-22 | 2022-23 | 2023-24 | 2024-25 |
|--------|------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|----------|----------|----------|----------|
| 1 Prof 4 | Module: Alignment and integration, Clinical skill training, Formative assessment, Log book, Prof 4: Aligned LRM | 2 CISP (MCI recognized) for mapping competencies with objectives, 2 CISP (MCI recognized) for sensitized faculty |
| 2 Capacity building | In house CISP (MCI recognized) for sensitized DCC | Sensitization of remaining faculty (35%) for mapping competencies with objectives, 2 CISP (MCI recognized) for sensitized faculty |
| 3 Implementation | Prof 1, Prof 2 | Prof 2, Prof 3 | Prof 3, Electives | Prof 4, Internship | Internship |
| 4 Monitoring | DCC, CCC, EG, CC, JCC | DCC, CCC, CC, JCC | DCC, CCC+EC, CC, JCC | DCC, CCC+EC, CC, JCC | DCC, CCC+EC, CC, JCC |
| 5 Evaluation | IQAC | IQAC | IQAC | IQAC | IQAC |

**Implication:** Implementation of reforms in a phased manner with capacity building at relevant intervals, as suggested in the model, will provide a steady foundation to the revised curriculum and will ease the process of change.

**CONCLUSION**

Any change should be weighed from multiple perspectives. The magnitude of change also defines the amount of input, resources and time. Bigger the change, more will be the time required for planning and leadership support. One key aspect involves involving various stakeholders as change agents and appraising them about the benefits of the Change. Competency Based Medical Education is one such change that requires careful planning, diligent implementation and robust monitoring. The proposed rollout plan, with its five distinct phases, can serve as a useful guide for educational leaders at various Medical schools to bring about this change with capacity building at one hand and administrative support at the other. The Interoperable systems that support information flow in number of directions is a hallmark of the proposed plan.

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