

## EDITORIAL

## INTEGRATED MEDICAL CURRICULUM: A REVIEW OF UNIVERSITY OF HEALTH SCIENCES CURRICULUM

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*“To study the phenomenon of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all.” Sir William Osler (1849–1919)*

‘Integration’ can be defined as ‘integration of content within a single lecture’ or ‘integration of a medical school’s curriculum’. MBBS curriculum of University of Health Sciences seems to be on the basis of ‘Z-shaped curriculum model’. Pakistani medical schools are unique in the sense that all teachers of basic medical sciences are physicians having MBBS degree and Faculty have additional post-graduate qualification in the relevant basic subject. Horizontal integration takes place when students prepare for annual examination, when all subjects are learned at the same time. During their lectures, these physician-teachers cross reference for horizontal integration and relate basic concepts with clinical situations for vertical integration. In the UHS curriculum, clinical modules and clinical skills are taught to further facilitate vertical integration. We propose a simple scheme to rationalize integration in the annual assessment. In the first year class only 10% questions may be integrated, clinical scenario based; subsequently 20% increase each year will give the ratios of 30%, 50%, 70% and 90%. To improve medical education in the country, the only way forward is to efficiently train teachers, recruit good teachers, authorize, trust and respect teachers.

**Keywords:** Integrated medical curriculum, physician-teachers, Z-shaped curriculum model

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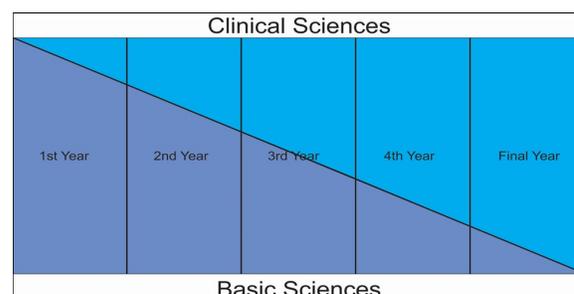
Students first learn basic and biomedical sciences and then move to clinical sciences in traditional method of teaching medicine. The students do not experience the relevance of basic and biomedical sciences as applied to clinical practice. Preferably the students should be encouraged to think as doctors from their day one in the medical school.<sup>1</sup> The popularity of the term ‘integrated curriculum’ has grown immensely in medical education over the last two decades, but what does this term mean? ‘Integration’ can be defined as ‘integration of content within a single lecture’ or ‘integration of a medical school’s curriculum’.<sup>2</sup>

Integration views learning and teaching in a holistic way and reflects the real world, which is interactive. An interactive or integrated curriculum helps students apply their knowledge to their work and to their personal development.<sup>3</sup> The curriculum integration in the field of medical education is of three types: Horizontal integration, i.e., integration across disciplines but within a finite time period; Vertical integration, integration across time, trying to enhance education by overcoming the traditional formats between the basic and clinical sciences; and Spiral integration defined as a combination of both horizontal and vertical integration that unifies integration across time and disciplines for both basic and clinical sciences. It refers to combination of basic and clinical sciences in such a way that the traditional divide between preclinical and clinical studies is broken down.<sup>2</sup>

University of Health Sciences (UHS), Lahore is the largest medical university in Pakistan. MBBS

curriculum of UHS is analyzed through ‘mapping’ technique to see its level of integration and to find out ways and means to improve its efficiency. ‘Curriculum mapping is concerned with what is taught (the content, the areas of expertise addressed, and the learning outcomes), how it is taught (the learning resources, the learning opportunities), when it is taught (the timetable and the curriculum sequence) and the measures used to determine whether the student has achieved the expected learning outcomes (assessment)’.<sup>2</sup>

The UHS curriculum seems to be designed on the basis of ‘Z-shaped curriculum model’ proposed by Wijnen-Meijer *et al*<sup>4</sup> in 2009. This model outlines a progressive introduction to clinical practice while maintaining a persistent basic science component throughout all years of a curriculum. This is an example of vertical integration. This model is modified, and rotated to the right (Figure-1).



**Figure-1: Vertical Integration in UHS Curriculum**

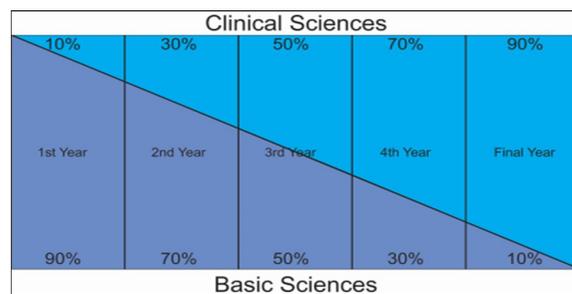
Basic to clinical (vertical) integration is the problem of medical schools where basic medical

sciences are taught by non-medical teachers. Pakistani medical schools are unique in the sense that all teachers of basic medical sciences are physicians having MBBS degree and Faculty have additional postgraduate qualification in the relevant basic subjects. During their lectures, these physician-teachers cross-reference to other basic subjects for horizontal integration. Horizontal integration also takes place when students prepare for final examination, when all subjects are learned at the same time. Physician-teachers are also fully capable of relating basic concepts with clinical situations for vertical integration and they always do so. Clinical modules are included in theory and clinical skills are taught in the laboratory to further facilitate vertical integration. Small group teaching (tutorials) polish verbal and communication skills of the students in which physician-teachers share their personal clinical experiences with the students. During the lab-work, students learn manual skills and learn handling of clinical instruments. They examine healthy subjects to note down the pulse, record blood pressure, examine breath and heart sounds etc. They learn to use basic diagnostic instruments like stethoscope, ophthalmoscope, thermometer, perimeter, spirometer, ECG machine etc. They also learn to examine Histology/Histopathology slides, Radiographs (X-rays), learn to test urine and blood specimens for simple diagnostic tests. Students note down their findings and relate them to different diseases and clinical situations. In all basic subjects, topics and concepts are taught and discussed with their clinical relevance for vertical integration. Horizontal integration takes place when during lectures there is cross referencing.

In the first two years of MBBS course, students learn Medical Physiology, Medical Biochemistry and Basic and Clinical Anatomy. In third and fourth years, they learn Drugs (Pharmacology), Diseases (Pathology), Social, Behavioural and Ethical aspects of medical field (Behavioural Sciences), Legal aspects of Medicine (Forensic Medicine) and Community Medicine. In all these basic subjects, students learn from lectures, books and other electronic resources. Their lab work, field tours, hospital duties and community interaction, train the students for their future work and assignment as physicians. Some of the fourth year subjects and all final year subjects are purely clinical.

Integrated curriculum should have integrated assessment also.<sup>5</sup> Although in UHS curriculum integration is facilitated throughout the MBBS course,

the ratio of integration between basic and clinical aspects during each year is not mentioned especially at the assessment level. So, in the annual paper, the ratio of basic concept questions and clinical scenario based (integrated) questions is not always balanced. For example, in first year paper, sometime there are three scenario based questions while at some other time there are six questions. We propose a simple scheme to rationalize this integration in the final assessment test of each year. As the first year class is novice to this concept of integration, only 10% questions may be integrated, clinical scenario based. After that 20% increase each year will give us the ratios of 30%, 50%, 70% and 90% in the subsequent years (Figure-2).



**Figure-2: Proposed Percentage of Basic and Clinical Sciences in MBBS Curriculum**

As a final word, whatever the curriculum design or instructional methodology may be, the man behind the gun ultimately matters. If we want to improve the medical education in the country, the only way forward is to efficiently train teachers, recruit good teachers, authorize, trust, and respect teachers!

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