

**PLANNING OF HAEMATOLOGY AND IMMUNOLOGY THEME IN AN INTEGRATED UNDERGRADUATE MEDICAL CURRICULUM**Farzana Rizwan<sup>1\*</sup>, Roland Gamini Sirisinghe<sup>1</sup> and Ashfaq Akram<sup>2</sup><sup>1</sup>School of Medicine, Taylor's University, Kuala Lumpur.<sup>2</sup>Riphah International University- Islamabad.**\*Corresponding Author: Dr. Farzana Rizwan**

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**ABSTRACT**

An undergraduate medical curriculum needs careful planning and development. The learning outcomes must satisfy the different domains of competencies and capabilities. Thus a medical undergraduate curriculum has to incorporate not only knowledge and skills specific to the field of medicine but also more general competencies defined in the guidelines of medical regulating authorities and the higher learning institute itself. It is not possible to address these competencies to the same extent in all components at every stage of the curriculum. We describe the experiences during the planning of the Haematology and Immunology block which was implemented in the first year of a 5-year integrated undergraduate medical curriculum. Considerations in the planning of the block in this particular instance included the different role it needed to play in the overall curriculum due to moving of the Block from Year 2 to Year 1. An increase in the number of students compared to the previous occasion when the block was run required changes in time tabling. There was feedback from students and resource persons. New facilities such as improved e-learning facilities were also taken into account. Communications through meetings and electronic media were undertaken in a timely manner. Advice and approval from the authorities in the academic administration were sought and obtained. We gained much experience in this process of rescrutinising and remodeling a teaching block within the medical curriculum and herein we share them with our colleagues in the area of undergraduate medical education.

**KEYWORDS:** Undergraduate medical curriculum, Learning outcomes, Haematology, Feedback**1. INTRODUCTION**

The careful planning, development and implementation of the curriculum is important at every level of medical education. The aim of any curriculum is to satisfy the needs of all stakeholders, including the community at large.<sup>[1]</sup> A good curriculum not only identifies the aims and objectives of the programme, but also defines the learning outcomes, sets the standards for their effective delivery, assessment and evaluation methods.<sup>[2]</sup> The structure and content are the basic components of curriculum design. The learning outcomes act as milestones to guide for curriculum planning.<sup>[3]</sup> This is not a new idea but existed since the works of Bloom, Mager and others became known to the world. The outcomes in the higher education are defined under the domains of knowledge and understanding, generic skills, cognitive skills and subject-specific skills.<sup>[4]</sup> However, an additional domain of 'attitudes and professionalism' is essential for medical education.<sup>[2]</sup>

The outcomes are important because they direct the decision-making on content matter and its organization in the curriculum design. There are different

organizations of curriculum models, including vertical and horizontal integration, core and options, spiral model and modular.<sup>[3]</sup> The spiral curriculum is considered a very effective way of organizing the contents, giving ample opportunity to expand the knowledge, skills and attitudes over a period of time.<sup>[5]</sup> The SPICES model of curriculum planning gives consideration of different aspects of educational strategies applicable to the needs of an institution.<sup>[6]</sup> The SPICES model recommends a student-centered learning approach, where the students are given more responsibility for their learning experience through problem based learning (PBL), vertical and/or horizontal integration and interprofessional approaches and an early clinical exposure.<sup>[7]</sup> Assessment is based on the learning outcomes. After the assessment is over, the students and staff must be informed of the strengths and weaknesses of the programme so that this information becomes a guiding tool for future curriculum planning.<sup>[2]</sup> However, any given module within such a curriculum may not be able to incorporate all the desirable components. It would be up to the module coordinator and the resource persons

to decide on the contribution of a module to the overall curriculum.

Each country has its own guidelines for different curricula, which set the requirements for trainers and teachers.<sup>[8]</sup> In the UK it is General Medical Council (GMC)<sup>[9]</sup> and in USA 'The Liaison Committee on Medical Education' is responsible for setting the standard for medical schools. The 'World Federation of Medical Education' (WFME) sets and overlooks the global standards of quality improvements at all stages and all aspects of medical education.<sup>[10]</sup> In Malaysia, Malaysian Medical Council (MMC) and Malaysian Qualification Agency (MQA) are the governing bodies to regulate the medical education and quality assurance respectively. In addition to discipline specific content,

the regulatory bodies require the outcomes to include attributes, essential during the working life of a graduate. There are nine such domains set by MQA, under the Malaysian Qualifications Framework, to standardize all higher education institutions in terms of criteria for standard of their quality. (<http://www.mqa.gov.my/>)

In addition to fulfillment of MQA/MMC requirements, the teaching and learning activities at Taylor's University are focused to achieve 'Taylor's Graduate Capabilities' (TGCs) which reflect the domains of knowledge, cognitive attributes and soft skills, including communication skills and digital literacy. The curriculum is designed to reflect them through different teaching and learning activities set for the Block.

**Table 1: Comparison between Malaysian Qualifications Framework domains and Taylor's Graduate Capabilities.**

MQA Domains		Taylor's Graduate Capabilities (TGCs)	
1	Knowledge	1	Discipline Specific Knowledge
2	Practical skills	2	Cognitive Capabilities
3	Social skills and responsibilities	3	Thinking and Problem Solving skills
4	Values, attitudes and professionalism	4	Communication Skills
5	Communication, leadership and team skills	5	Interpersonal Skills
6	Problem solving and scientific skills	6	Intrapersonal Skills
7	Information management and lifelong learning skills	7	Citizenship and Global Perspectives
8	Information management and lifelong learning skills	8	Digital Literacy

The curricula need continuous monitoring and evaluation in order to stay aligned with MQA and university requirements and to make improvements/amendments based on the regular feedback from students and faculty members.

## 2. STRUCTURE OF THE CURRICULUM AND PLACE OF HAEMATOLOGY AND IMMUNOLOGY BLOCK

The medical curriculum at Taylor's University spans over five years. It is an integrated curriculum (horizontal and vertical integration) with modular core and spiral learning curve.<sup>[11]</sup> The first two years (Phase-I) are allocated for preclinical teaching and learning activities, and another three years (Phase-II) for the clinical training. There are two semesters in each year. Phase-I is dedicated to the preclinical subjects, clinical skills sessions and hospital visits. The curriculum content is delivered through lectures, practical sessions, PBLs, seminars and tutorials during each system module.

In Phase-I, the system module plays an integral part in the curriculum by broadening the approach from discipline-based to system-based acquisition of knowledge, skills and attitudes. It has vertical themes, spiraling through the curriculum.<sup>[8]</sup> This approach makes an early clinical exposure more relevant and therefore makes a significant difference in the understanding of principles taught during the module. Phase II, the clinical phase of the programme, comprises a series of postings

in the various clinical specialties. Community based postings and a clinical elective are also included.

In the previous years the Haematology and Immunology Block was conducted in Year 2 of the MBBS programme. Following a review of the sequence of Blocks in Phase I, the Haematology & Immunology Block was brought to Year 1, as the first block in the second semester. Thus it would be the first 'systems' block, after completion of the 'Foundation Block' during the first semester. The Foundation Block includes basic concepts within the various disciplines that are common and applicable to most body systems. The reason for the change in the placement of the Haematology and Immunology Block was the observation that knowledge and concepts included in the block were relevant to many other systems. Thus it was thought to be advantageous to have the Haematology and Immunology Block before the other systems. The Block runs for four weeks.

## 3. CONSIDERATIONS DURING REVIEW OF THE BLOCK

### (a) As a result of moving the block

i. The content of any system block is influenced by its placement relative to other blocks in the series of such blocks. Some content may be relevant to two or more blocks. Such content will ideally be included in the first of the blocks to which the content has relevance and then, need not be included in the blocks that come later.

If however, the relative placement is changed and the relative positions of the two blocks are reversed, then the same content may need to be moved to the block that is conducted first. This consideration was applicable to the Haematology and Immunology Block when its position in the series of blocks changed. –Being the second last block previously, some topics that were relevant but covered in previous blocks were omitted; when the Block became the first system block, such content needed to be included in the Block. Therefore, the resource persons in different disciplines were requested to look into this matter. Their feedback in the matter was the basis of some changes in the content of the Block. It was revealed that topics such as thromboembolism, haemorrhage were also taught during CVS block. Certain topics were not included such as heme metabolism, plasma proteins, anticoagulants, treatment of anaemia. For example, thrombo-embolism which was previously included in the cardiovascular block and thus not a content of Haematology and Immunology Block, was thought to be better introduced in the H & I block after the revision of the sequence of blocks.

ii. Being the first systems block, Haematology and Immunology Block would be the first block that incorporates problem based learning (PBL) as a mode of learning. The PBL material for the Block that were available needed to be rescrutinised for two main reasons; first, as the Block was previously conducted towards the end of Phase I, some content from other systems already studies may have been included in the material. Secondly formulation of the problems may have been more suited for students with prior experience in PBL than for those encountering PBL for the first time. There was also the need to introduce students to the requirements of PBLs as their new tool of learning. An introductory briefing session, designed for both students and faculty, was added in the timetable. PBL material and learning outcomes were reviewed in order to ensure they were suitable for students just starting their PBL.

iii. The first systems block is the first to have a clinical skills component. A skills session on medical history taking was added to the Block to introduce students to the general principles of history taking. There was no necessity to review the procedure skills already included in the Block.

#### **(b) Rescrutinising content**

Notwithstanding the fact that it was the same resource persons from various basic medical science disciplines who had, in the previous year, formulated the contents of the Haematology and Immunology Block, it was thought a relook at the contents would be appropriate. Thus, in addition to the instruction to look for any contents from other blocks that need to be moved, a request was made for them to review the appropriateness of the content of the Block when it was conducted previously. Such review, while confirming the appropriateness of the contents, also brought some recommendations for further improvement. It was suggested that the scope of some

topics, for example, heme metabolism, plasma proteins, anticoagulants and principles of treatment of anaemia be expanded.

Another area that underwent modifications based on feedback from the resource persons, albeit minor, was the sequence of the arrangement of the content within the Block.

#### **(c) Increased number of students**

The increased number of student intake did not have any impact on the content or their sequence within the Block but had implications of the resources. The class needed to be divided into a greater number of groups than before for seminars and PBL, and two for visit to the National Blood Bank. This required more facilitators for PBL, seminars and assistance during visit to the facility.

#### **(d) Appropriateness of content**

Although the Block had been implemented previously, it was decided that the content already included in the Block to be vetted for their appropriateness. This was done with the help of the resource persons and the content was found to be mostly appropriate.

Even when the topics taught in the Block are appropriate there is always the question of the ideal depth to which each topic should be covered. There was previous concern shown by the students about depth of some disciplines within the block – for example, biochemistry and immunology. After consultation with the discipline coordinators it was decided to reduce the depth of coverage in some topics in biochemistry and immunology, keeping in view the knowledge required at the beginning of second semester and the duration of the block.

#### **(e) Sequencing of teaching**

It is always appropriate to review the sequence of learning sessions before the conduct of any block even if it was implemented previously. With the additional topics included in the outcomes and the revision of other content, it became a necessity in this instance. Feedback from academic staff was helpful in the process of sequencing learning sessions.

#### **(f) New teaching learning modes**

Sessions, which were called Tutorials, where staff could revise difficult concepts with students and project questions similar to those used in summative assessments with discussion of answers were introduced. This was based mainly on the feedback from academic staff. Students could bring up their difficulties for discussion during these sessions.

In keeping with the policy of the University to increase the e-learning content, greater use of the University e-learning portal was planned. While previously the portal was mostly a site of placement of notes and lecture presentations, the staff were requested to have videos,

quizzes, forums etc. to supplement the teaching during the contact hours.

#### **(g) Providing information on the block to students and staff**

The School of Medicine introduced Module Information Booklets (MIB) for all blocks and clinical postings within the MBBS programme. The Haematology and Immunology Block followed this and produced the MIB for the Block that laid out the general information regarding the Block - including the list of faculty members and their contacts, recommended books, detailed learning outcome and assessment criteria. The soft copy was made available to lecturers and students through the e-learning portal.

#### **4. PROCESS OF UPDATING AND FORMALISING**

The process of review of the Block started with a mail to all resource persons, Deputy Dean, Programme Director and Associate Dean, Medical Education with an invitation to a meeting to discuss this matter. The objectives of the Block with the time table for the previous implementation of the block were also sent with the invitation. All staff were requested to scrutinize the contents for appropriateness for the block and also for additional contents in view of the change in the placement of the Block within the Phase I. staff were also encouraged to discuss the content with the colleagues in the same discipline prior to the meeting.

During the meeting the content was discussed in detail in the presence of all resource persons. The discussion was moderated by the Deputy Dean. The topics and lecture titles in each discipline were agreed on. The learning outcomes for each topic were also scrutinized to ensure that they are of suitable depth. The resource persons were requested to list the learning outcomes for the purpose of inclusion in the Module Information Booklet.

The sequence of teaching learning sessions was discussed and the sessions were inserted into the time table template accordingly. After the meeting, the filled-in time table was mailed to all resource persons for rechecking of the session titles and their sequence.

PBL facilitators for each problem were identified and a leader among the facilitators for each problem was elected to coordinate the revision, if necessary, of the PBL material in view of the modified outcomes and the Block being the first in the MBBS programme to incorporate PBL. The revision was to be overseen by the Associate Dean, Medical Education. Material previously used PBL were made available. It was decided that the revision could take the form of either be modification of the available material or discarding them and formulating new material. Accordingly some PBL triggers were modified while some were replaced with new triggers.

Following the first meeting the draft time table was mailed to all resource persons, Deputy Dean, Programme

Director and Associate Dean, Medical Education. The recipients rechecked the session titles and the sequence and sent feedback to the coordinator. The Module Information Booklet was compiled and sent to Deputy Dean and Associate Dean for vetting. Following feedback the time table and MIB were finalized, circulated to all Phase I academic staff and uploaded onto the e-learning portal.

With this all preparations for the implementation of the Block were completed.

#### **Feedback from students**

At the end of the Haematology and Immunology Block, a module evaluation survey was done. This was in keeping with the practice at the School of Medicine. All students who went through the Block were requested to participate in the online feedback of the module. The response rate was over 90%.

The module emerged as being well-structured, stimulating and having clearly defined learning outcomes. Students felt that the faculty was well prepared for the teaching learning activities and that the activities closely matched with the stated learning outcomes. There was a strong agreement about adequacy of the time provided for learning and facilities available for the practical sessions. It was the reward for re-organising the contents systematically.

The PBL benefitted them by covering the content that was not covered in other teaching sessions and also reinforced whatever they had learnt in lectures and practical. Majority of them also felt it beneficial to prepare for the seminars. Shifting some of the topics from lectures to seminars or PBLs and reducing the load of nonessential/duplicate topics from biochemistry and immunology was beneficial.

Tutorial classes were liked by most students and these sessions helped students to understand the difficult concepts and clarify the misconceptions. A high level of approval was given for the clinical skill sessions and the visit to National Blood Centre, where they had the opportunity not only observe the function of the facility, but also to donate blood and clerk haemophilia patients.

It was gratifying to observe that student feedback overwhelmingly confirmed that the continuous assessment at the end of the Block matched the intended learning outcomes and that all the exam question topics were covered during lectures, practical, seminars, PBLs and tutorials.

There were however, some areas of where student opinion was divided. The preparation time for continuous assessment was insufficient in the opinion of a significant minority of students. This was in spite of students having at least five days (including weekend) time available exclusively for self-study. A few had

concerns regarding PBL and seminars in that they consumed much of their learning time. There was a request for more online quizzes and recorded lectures.

### **Experience from planning a systems block in an integrated curriculum**

Notwithstanding the fact that a block had previously been implemented, review of the content, learning outcomes and sequence of learning activities is advised each time the block is planned. The modifications carried out each time the block is run may be minor but cumulatively, over time these may add upto significant improvement. It may also so happen that some changes brought about did not achieve the desired effects and need to be reversed. In the current situation the complete review was mandatory as the placement of the block was changed.

The duration of the module and knowledge level of students must be the guiding tools for adding or removing any content within a teaching block. In particular, within integrated curricula knowledge is cumulative over the duration of a Phase. Thus the level of knowledge of students entering a block varies with the positioning of the block. Careful planning and close interaction with colleagues are necessary to decide what is ideal for the students entering a block, placed at a specific position in the relevant Phase.

A meeting where all relevant disciplines are adequately represented is ideal for discussion, as occurred in the current situation. However, prior intimation of what is expected to be achieved in such a meeting facilitated the discussion. In planning for the Block the resource persons were informed regarding the need to review content in view of the change in position of the block and also based on the experience of the staff at the previous implementation of the block. All relevant material was also provided. With these the discussion could be kept to the point and proceeded smoothly. It may be necessary to have repeated meetings if the changes are major or if there is no consensus at the first one. In the planning of this block a single meeting was sufficient to agree on the required changes.

The planning should commence, ideally, 3 to 4 months before the start of the block and interactions among resource persons generally continue for a significant time before the plan is finalised. In the current situation, all major issues were agreed upon at the meeting, but there were still matters to be finalized. These matters did not need formal meetings among all resource persons but mostly discussions between the coordinator and the resource persons of a particular discipline, but still took time to be finalized.

The involvement of the immediate authorities at an early stage helps in ensuring that the proposed modifications are within the policies and curriculum of the medical school. The Deputy Dean and Programme Director were

involved throughout the planning period. Approval of the process by the authorities also provides access to administrative help in the planning process.

Paying attention to opinions of students is also a key to successfully planning and implementing a block. Some of the changes to the implementation of the block were based on student feedback on previous blocks. Post implementation survey validated the changes from the students' point of view. Providing the students with guidance through the Module Information Booklet and enhancement of e-learning were well received by students.

### **“Experience from planning a systems block in an integrated curriculum”]**

A change in the number of students can have implication in the implementation of the block, particularly where all students cannot be accommodated all at once. Visits to outside institutions, clinical skills training may be some such instances. Although there was an increase in the numbers of students, it was not sufficiently large to affect the sequencing of sessions in the block.

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