

Module Review

Cardiovascular Winter Semester 2009

Course Director: Barry Rayburn
Co-director: Silvio Litovsky

Course Date: January 5th-February 4th, 2009

Review Date: December 4th 2009

Present:	Cathy Fuller	Chair, Pre-clinical Sub-Committee
	Steven Pogwizd	Ad hoc reviewer
	Silvio Litovsky	Course Co-Director
	Ashley Jackson	Student Course Representative
	Murray Spruill	Student Course Representative
	James Jackson	UME
	Kristina Panizzi-Woodley	UME Administration

Apologies: Barry Rayburn **Course Director**

Review Process:

The module review process consists of three parts; the self-study conducted by the course directors with the aid of UME, the review, i.e., the face-to-face meeting between representatives of the pre-clinical sub-committee of the MEC, the student representatives and the course directors (the review committee) and the final part, the report to the Pre-clinical sub-committee and thence to the MEC. The review committee received the self-study material approximately 7 weeks in advance of the meeting. Below is a summary of the face-to-face meeting, highlighting strengths and weaknesses of the course, and outlining areas for improvement. This is followed by the detailed report, which provides the rationale for the recommendations and overall evaluation.

Summary:

Cardiovascular (CV) was a successful module, highly popular with the students. This was based on several factors, but the overwhelming reason is the enthusiasm, dedication and commitment of the two course directors to the module, which was clearly communicated by the class through the student evaluations. Few areas were identified where improvements could be made, although not every aspect of the course was viewed positively by the students, some (e.g., attendance policies), were predominantly policies drawn up by the Module Directors Committee and thus outside the immediate control of the CV course directors.

Strengths:

The two directors are seen as a major contributing factor to the success of this module. Other strengths include:

Accessibility of module directors

Review sessions run by the directors

Overall module organization

Small groups

Textbook , physiology handout, and web-based resources.

Punctual grading

Weaknesses:

Pharmacology of the CV system was not well covered.

Lack of formal CV anatomy and histology.

Exams were not sufficiently challenging.

Recommendations for Improvement:

Increase coverage of pharmacology to include areas that are currently weak, particularly in terms of side effects of drugs used to treat the cardiovascular system

Increase coverage of formal anatomy, perhaps by introducing a laboratory component.

Move towards reducing student contact hours to approach benchmark of < 20h per week.

Increase difficulty of exams to include additional clinical scenarios and move towards the benchmark of 70-80% of questions in NBME format by 2010

Recommendation:

Cardiovascular is a strong module that is very popular with the students. The success of this module depends to a large extent on the course directors who have structured the course to contain multiple review sessions that re-enforce material delivered by individual lecturers. Furthermore, they place a priority on being accessible to the students. Despite this there is clearly room for improvement in the some basic science areas, in terms of covering material and/or how that material is covered by individual lecturers. This latter may be an issue for faculty development. Exams should also be reviewed to include more difficult questions than used previously. It is recommended that this course be reviewed in one year.

Report of Cardiovascular Review Committee Meeting, December 4th 2009

All six of the self-study areas were reviewed in order.

Module Objectives and Content

As with the majority of first year modules, objectives related to “commitment to patient good” (UASOM Objective 1, O1) were not really relevant to the CV module. However, the CV module did have multiple module level objectives that correlated with UASOM O3 (acquire a fund of biomedical, psychological and social knowledge...) and at least one objective that correlated with at least one aspect each of O2, O4, O5 and O6. In terms of content, topics taught by CV covered the vast majority of subjects listed under Normal and Abnormal processes as they relate to the CV system. However there were some omissions listed as follows:

Anatomy and Histology: A normal heart, including the coronary vessels is viewed by the students as the first specimen in the “hands on” pathology lab. The second lecture of the block is a “Review of CV Anatomy”, while the third lecture covers “Cardiac Structure and Function”. Towards the end of the module one lecture covers “Cardiac Embryology”. Surgical videos which covered some anatomy were generally well received and additional material was available on WebCT. Other than in these lectures, anatomy of the vasculature and cardiac histology are not covered; there is one lecture on “Special Circulations”, but otherwise it is assumed that these will be covered in the module specific blocks. Embryology was identified by students as a weakness; this lecture will not be presented in 2010. In general, students commented that increased exposure to anatomy would be a positive change.

Pharmacology: Only 6 out of 11 USMLE objectives for pharmacology were covered in this module. Those omitted included “mechanisms of action and adverse effects of CV drugs”, “measures used to combat hypotension and shock”; “drugs affecting cholesterol and lipid metabolism”; “immunosuppressive and antimicrobial drugs”; “drugs to treat PAD”. Six student contact hours were given to “pacemakers, angioplasty, valves, grafts and other surgical procedures”. In terms of test questions, only 12 items related to pharmacology out of 150 total over two exams.

Microbiology: The microbiology lab was not viewed very positively as it seemed disconnected from the rest of the module and it seemed to have little direct relevance to cardiovascular medicine. It was noted that this was one area in which the module directors did not have a hand in organizing. Consequences of infection for the CV system was not covered in the module with the exception of one general lecture on shock (principally hypovolemic as opposed to septic however), and coverage of endocarditis in material covering valve disease. It was suggested that it would be better if cardiovascular infectious disease was addressed in the context of Fundamentals II, rather than in the CV module per se.

Other: Some other disorders were also not covered or covered only briefly. These include systemic disorders, e.g., acute rheumatic fever, SLE, vasculitis, temporal arteritis. One student commented on brief coverage of cardiac tumors, although there was actually 1 lecture covering neoplastic disorders.

CV incorporated material from two of the five SOM themes into the course, with emphasis on “Clinical Skills” (presumably this was at the theoretical level and reflects the emphasis on clinical science lectures in this module), and “Translating Evidence into Practice” theme, which was covered by lectures, small groups and case studies. Geriatric and Women’s Health theme were addressed by one lecture each.

Methods of Instruction and Assessment

All of the materials relating to SOM objectives that were relevant for CV were covered by lecture, small group, labs, large discussion groups, review sessions or a combination of these activities.

The majority of the material taught related to the “Biomedical Knowledge; Normal Structure/Function” and “Causes of Disease” sub-objectives of UASOM O3. In terms of student contact hours, 69.2% was spent in lecture (slightly down from 71.8% in 2007), which is above the 2010 benchmark of 50% lecture. The remaining 30% of time was spent in a combination of other activities, including case discussions, labs, and patient demonstrations; the largest portion of the remaining time was spent on small groups (8.9%) and review sessions (8.7%). In two weeks of the five week module, total student contact hours (excluding ICM) slightly exceeded the 20 hour/week benchmark, at 20.7 and 21 contact hours, respectively. However, including ICM, student contact hours were above the 20 h/week benchmark for 3 out of the five weeks. However, lectures were well received for the most part, with 96% of the class rating them at 4.6 (out of 5) or above.

The CV module had four small group sessions covering ECG, arrhythmias, heart failure, valve disease, and CAD. Students were not evaluated using either the professional or standard forms, but were given full participation points for attending the sessions. The small groups were very well received by the students, 86% of the students giving this activity a rating of 4.3 or above. The strengths of the small groups included the reinforcement of concepts covered in class and enhanced understanding of clinical components. Preceptors received handouts prior to each small group identifying the major points that should be covered, thus theoretically reducing variability between small group preceptors. However, some students commented that a preceptor led one group and then sent colleagues or fellows for remaining groups, and that other preceptors were not prepared, and/or had trouble using slides. Students appreciated that prior preparation for these sessions was not required, the attendance-based grading of the small group, and the fact that resolution of, or answers to, the small group cases were published following the small group; this also helped standardize the students’ experiences. Students also suggested including additional small groups as they were particularly helpful for the final exam and potentially including a small group session on CPR and defibrillation.

Exams: In this module, multiple choice questions accounted for 75% of the knowledge component but 60% for final tabulation (above benchmark of <50%). The percentage of questions in NBME format were 18% on Exam I (midterm) 24% on Exam II (final)., although many questions from the midterm were repeated on the final exam. The benchmark is to obtain 70%-80% of questions in NBME format by 2010. The average number of questions per lecture hour was 1.82, and the majority of lectures had questions associated with them on the exams. In terms of Step 1 content area, topics relevant to CV were adequately covered, with the possible exceptions of pharmacology

and infectious disease topics. In general students thought the exams were fair and an accurate representation of concepts, although some students thought the exams were too easy, with insufficient complex case scenario type questions, particularly on the midterm. Some students also commented that because everyone did well on the course, grades were non-discriminatory and that they felt penalized for studying hard and learning the material. However, this was a minority view. Ninety-nine percent of the class rated the exams at 4.7 or above in response to the item concerning “tested understanding of course subject matter”; essentially grades were sufficiently high that all students were happy with the outcome. Test items fell within the 0.7-0.89 range, consistent with moderate reliability. Although the school has a closed exam policy, exam questions are linked to the USLME codes. However, students did not find this particularly helpful, whereas the module directors going over questions that the class missed on the exams, was viewed very positively. Students also appreciated having access to exams from the previous year.

In addition to MCQ exams, the directors also gave a structured white space exam which took the form of a case review, based on cases presented during the lectures. Every member of the class did well on this and it was favorably received; this test accounted for 12.5% of the knowledge component and 10% of the final grade; interestingly, grades were awarded in deciles and rounded up – hence a student who scored 71% on this quiz would be awarded a score of 80%. The directors also held knowledge quizzes, also worth 12.5% of the knowledge component grade; these were based on the previous days material and were based on ARS questions asked during review sessions. Students felt that this approach kept them up to date with the material. Points awarded following a quiz in the microbiology lab were also included in these points.

Student Outcomes

The required attendance for CV was set at 80%; 93.7% of students attended 80% or more of lectures over the course. As with the white space exam, attendance points were given in deciles and rounded up. ARS questions to monitor attendance were given once a day.

Module raw score means for the class of 2008/2009 (91.7) was noticeably higher than that for 2007/2008 (86.6), and was in fact the highest of all first year courses taken by the class of 2012. In terms on individual exams, the raw score (2008) for Exam I (Midterm) was 92.4%, for Exam II, (Final) 84.3%, and for the Final Case Review (structured white space exam), 97.4%. The mean score on the ARS quizzes held during the review sessions was 98.9%. The overall knowledge performance mean was 89.8% in 2009 and 85.1% in 2008. Individual group/performance means (composed of scores for small group participation and pathology lab participation, and attendance at lectures were 91.7% in 2009 and 86.6% in 2008. There were no failures in the CV module in 2009; this compared with 1 failure for this module in 2008. All other scores were comparable. However, information to correlate these outcomes with the national means was not available.

Student Evaluation of Module

The student evaluations of CV were extremely favorable, compared to the other modules reviewed to date with many students stating that CV should be the model for all other modules. Approximately 99% of the class rated the module as good, or outstanding; Similarly high percentages of the class thought that the module goals and objectives

were clearly outlined (99%), that basic and clinical sciences were well integrated (99%), that there were planned opportunities to use outside resources (79%), that feedback was provided (97%), that small groups aided understanding (90%), and that lectures and small groups facilitated understanding concepts (96% and 86%, respectively). As far as the emphasis on learning outcomes is concerned, 62% of students felt that the greatest emphasis was on understanding concepts, 53% felt that the second greatest amount of emphasis was on applying facts and concepts to clinic, while 88% thought that the least amount of emphasis was placed on recalling facts and definitions. Evaluation of the exams was interesting as the majority of students felt that the exams were a fair and accurate representation of material taught and that concepts rather than fact recall were tested. However, review of the exams showed that roughly 70-80% of questions on the two MCQ exams required fact recall as compared to 20-30% of questions that required knowledge of concepts and application of that knowledge; this ratio is approximately the same as in all other modules reviewed to date.

Consistent with the overall success of this module, only a few items were of concern to the students.

Only 36% of the students felt that “projects” were helpful, though this more likely reflects an unclear understanding of what projects were being referred to by the survey.

A comment from one student stated that “use of outside materials was discouraged”; however, there seems to be no basis for this comment as it was unclear to both module directors and class representatives as to what this was referring.

Several students commented that the tests, particularly the mid-term were too easy.

ARS as used in this module received the highest ratings of any module for the use of this technology, e.g., in CV, 70% of the class stated that it made them pay attention in lecture and 84% stated that it made them more likely to prepare for lecture, and kept them up-to-date with the material; by comparison, the next highest ratings for these parameters in an organ module were 39% (GI and Renal), and 21% (Pulmonary). However, some students complained that they were forced to cram versus focusing on the material in class on the day of the quiz. The students also noted that the attendance ARS only being taken at a single time each day was a weakness, as presumably some students miss the question. Interestingly, no lecturers used ARS in this course.

Despite the fact that lectures were well attended and popular, the attendance policy was the single biggest complaint in this module, although this is not a module specific issue.

The Nominal Group Technique (NGT) was not used for this module.

Evaluation of Lecturers and Preceptors

The overall quality of the faculty is rated Excellent or Satisfactory by 93% of the students in 2009 and 99% noted that the module faculty facilitated student learning. One lecturer had an evaluation score of 2.3 (occasionally fails to meet expectations), although 90% of the class rated this lecturer at <3. Some students also complained that some lecturers simply read from PowerPoint slides. The vast majority of lecturers fell between 3 and 4 (meets expectations and exceeds expectations), with two lecturers falling between 4 and

5 (exceeds expectations). In contrast in 2008, 90% of the class rated 4 lecturers <3 and only one lecturer above 4.

No small group preceptor fell below an overall mean of 5 (satisfactory = 4-6)) and no one had more than 36% of ratings at less than 4. In 2008, one preceptor had an overall mean of 4.6, with 60% of raters grading this individual as <4.

Impact of Changes from Last Year

Most significant change from 2008 was the addition of an extra week to the CV module. This was used to increase the number of review sessions. Other additions included the institution of a mandatory pathology lab, addition of a video showing surgical anatomy and a patient demonstration.