

## *Scientific Foundations Committee*

*February 7, 2014*

*7:30 – 9:00 am, B-646 Mayo*

***In Attendance:*** J Chipman, B Clarke, S Katz, R Kempainen, M Klimstra, C Niewoehner, J Norrander, M Ramey, M Sanders, L Schimmenti, K Setterholm, P Southern, H Thompson, D Wangensteen, T Weinhaus,

***Absent:*** S Allen, R Amado, E Coleman, G Filice, G Giesler, A Minenko, J Nixon, D Powell, D Satin, D Thompson, K Watson -CEC, K Wickman, M Woods-CEC

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### **Minutes**

Minutes for the January 10, 2014 meeting were approved with no changes or additions.

### **Announcements/Updates**

#### Milestone II Exam

Dr. Jeff Chipman reported the Milestone II exam dates have been set in the IERC and SimPortal, students will sign-up for their preferred time slot to take their exams. There is a date set in March to train “raters”, to standardize this assessment across both campuses. SimPortal will travel to Duluth and dates are still being determined. Once all students have tested there will be a review of results to determine reliability and validity of the assessment and any adjustments needed will be completed before exams are taken in the 2014-15 academic year. He reported that consideration is being given to developing a Milestone to measure clinical skill achievement at the end of Year 1. Dr. Chipman will bring proposals to SFC for discussion and he asked if members have ideas and suggestions for what skills at what level should be tested at that point, with respect to use of SimPortal next year. One goal for expanding SimPortal to year one assessment is to understand how integration of the basic sciences and clinical concepts are being applied for first year students. He noted the feedback provided at the January meeting has been applied to making changes to the “rate” tool and also as a result a video introduction will be developed to provide background and orientation to the exam. Students will be shown the video before taking the exam. A practical skills approach at the end of year 1 that incorporates Anatomy, Biochemistry, and Genetics as a way to integrate the Year-1 content into the exam. This also is an opportunity to create new content; part of the Milestone II exam content was taken from the MedEd Portal and it should also work as a good tool to assist with content for a year-1 exam.

#### Update on W, I, and N grades in the event a student drops a medical school class

Dr. Katz reviewed the discussion at the SFC January meeting which resulted in review of the University Policy and agreement to consistently use the Policy on W, I and N grades, until otherwise informed by official change in application of grading practices to the AHC professional programs. He noted it requires that a student(s) who drops out after a certain percentage of the class has taken place is required to receive a “W” for the course. Discussion also determined that medical students need to have this requirement brought to their attention and clarified as the grading practice that is in place. The Policy was distributed after the January meeting and he will send to all course directors again, as a reminder. Anne Edverson, Medical School Registrar, will serve on a University Task Force to determine if there are some areas of the Policy that might be changed in application to AHC professional students. Once changes are made for AHC programs, the University will require the programs to follow it without exception. The main focus is to eliminate grading variability that occurs when grade assignments are based upon individual faculty and/or course director interpretation. Dr. Katz noted that progress toward resolving misinformation and misunderstanding about grading is moving in the right direction. Students, faculty and course directors will be informed when the Task Force has determined what changes are made to accommodate AHC professional programs.

## Annual Course Review

### Science of Medical Practice (SMP)

Dr. Michel Sanders provided an overview of the course:

The students are expected to understand the biological complexity of genetic diversity of an organism on a normal level and how it all integrates. Genetics supplies the majority of the clinical and translational components of the course. The genetics lectures are used to tie the basic science to clinical aspects of medicine, which seems to be much more effective than the previous course structure.

Drs. Sanders and Schimmenti have developed 7 workshops to address different areas of the course content. The entire morning is spent on the topic using this workshop format. In talking about this structure she provided a breakdown of the workshop, noting that a mix of basic science, clinical science, and a surgeon to add another clinical perspective for integration. The clinical portion also includes individual patients for their perspective for treatment they've had to add another layer to the integration across the workshop topic on a given day. This is an addition of very short segments provided by clinicians. The course does include graduate students and the structure has also worked well for them.

The course objectives are based upon those national standards developed by the Association of Medical Biochemistry course directors and the Association of Professors of Human Medical Genetics; Drs. Sanders and Schimmenti attend the annual meetings of the two organizations. The sessions provide the opportunity to learn about new national trends in teaching the course content.

Assessments are standard and include:

- 17 weekly quizzes, 10% of the course grad
- 2 fifty minute, thirty question test
  - (1) is at 25% of the length of the course and 1 at 75% of the way through the course
  - (2) Approximately 25-30 students fail the first test (very standard molecular biology material)
  - (3) Once the test is given students begin to comprehend the level of work completing the course successfully will require.
  - (4) The volume of material at a very rapid pace is an important aspect students need to comprehend quickly in the course overall.
  - (5) Dr. Chipman added that this is a touch stone test, an experience students need to clearly understand the pace of medical education. For a number of students who fail or do poorly the test is a wake-up call.
- There are the stand midterm and final examinations that are 60% of the course grade.
- This segment is "professionalism" and is self-reported attendance at all required sessions (include patient sessions and invited speaker events)
- Formative assessment is made of a "study question bank" which includes approximately 500 questions

Dr. Katz reported that because incoming medical students are not required to have biochemistry, this is a difficult situation for students who haven't had it when their classmates do have the background. This complicates the ability to handle the volume of material they are required to learn in the course in quick succession. He reiterated the difficulty struggling students have in catching up as year-1 moves forward. There are approximately 1/3 of the class in the cohort of students who haven't had biochemistry as undergraduates.

### Evidence of Outcomes Being Achieved

For the performance on the mid-term and final, the means are at approximately 84 to 85%, which are very strong. Most of the students do well, 70 students received 90% of the total course points. Students who are doing poorly are behind by a fairly wide margin. The distribution of the total points of the course among students is shown and the pass level is shown as well. Those having difficulty are far below the pass level in terms of the points earned (approximately 12 students). Fourteen of seventeen students who are struggling have been out of school for more than a year; this appears to be the biggest predictor of not being successful in Biochemistry. A second predictor for students who struggle is that they were not biology majors in their undergraduate course work. All of students who are at risk fall into one of these categories.

Dr. Katz pointed out that there were similar problems for some of the same students in HSF; these are students who also failed. Three first year students failed all the major courses in the first semester. COSSS is struggling to find a solution for these students. Dr. Sanders noted that this is a fairly new development and in their evaluation is directly related to changes in the prerequisites for admission to UMMS. The recommendation from Drs. Sanders and Schimmenti is for the School to consider the admission criteria for acceptance, the current Admission policies give incoming students the impression that lack of biochemistry and biology in their undergraduate work isn't a barrier to successfully graduating from medical school. This often leads to a very large debt load and possibly not being able to match for residency training. The issues for failing students are the biggest problem in the SMP. One added change for the course is the addition of 10 nutrition lectures, which students seem to appreciate, Dr. Towle has taught them and they are well integrated.

Student evaluations are generally quite good; there are some areas where student feedback is indicating they want added resources. They ask for more on-line non-graded assessments, which may relate to their call for a bank of test questions available in an exam format to use for practice. They may be asking for more Board style questions. Another area where as a group they indicate a need for change is the 4-hour blocks, but then as individuals they don't want the current structure broken up into smaller time blocks.

Why are UMMS student Boards scores rising and it appears scores are going up across all areas of content? Dr. Katz reported the students who are struggling are not necessarily making it as far as taking Step I and therefore don't have an affect on Board scores for the School, until they've spent added time in medical school due to remediation and deceleration. There has been some discussion regarding their ability to match for their PGY-1 internship year. There may be as many as a dozen of the current graduating class that won't match this year. Dr. Chipman reported due to an inadequate number of residency slots, last year there were approximately 1000 U.S. medical students who were unable to find a match (the equivalent of 3 medical school classes). Minnesota is an importer of graduating students to fill slots; for example Texas graduates more students than they have resident slots and they are exporters of medical school graduates. He reminded Committee members due to the lack of legislation by Congress to increase the number of GME openings and funding support will not increase. For students who are having difficulty passing course and who will have failures appearing on their transcripts; the increased competition for existing residency slots will end with more these students who graduate at the low end of the performance scale and with a huge debt load, there will be no opportunity to get resident training and will be unable to practice medicine.

Discussion regarding UMMS Admissions current criteria which doesn't require biochemistry was lengthy and has raised concerns for several semesters. A number of students without the science are also those struggling. An added predictor for performance issues for MS-1 are those who have been out of school for a year or more; they appear to need more time to get acclimated to the rigorous study and learning required and the volume of material covered in each course. Several solutions have been discussed which include:

- For those without a specified level of science and/or biochemistry, implement a required pre-matriculation medical biochemistry course
- More rigorous review by COSSS with standardized determinants for deceleration and/or dismissal, or self-withdrawal from UMMS
- add more methods to assess professionalism (practical applications with patient visits and in written assessments)

Dr. Katz reported Medical Education administration is discussing the need to review all levels of data currently being gathered across all students. It would include large amount of data such as their admission statistics, and performance information to see what effect the changes in prerequisites, curriculum, grading requirements and practices have had. The problem to first overcome is the fact that all of the data is held in different systems and to establish sound reporting and comparison across all of the data, new data collection processes have to be identified. ESC will propose to EC the great need to move forward to statistically review what has occurred. Dimple Patel, the new Associate Dean for Admissions, is attending COSSS meetings and has been involved in the discussions related to incoming medical student educational background, pre-med academic preparation and GPA.

A number of course directors reported an increase in the number of students stating they are unable to take exams on-time, on the established date/time. The circumstances give these students more time to prepare and an added advantage in their overall performance in courses. **Dr. Katz encouraged all course directors to inform students on the 1st day of class to establish their expectations throughout the course for attendance and exams. He will share the information that all dental students receive at the beginning of each semester.** Brad Clarke offered tracking of students who do not take exams on time and invited course directors to consistently report these circumstances to him. **Student feedback indicates that they are advised as early as Orientation for incoming student and from course managers, to not take an exam if they aren't feeling up to the stressful situation and to take it at a time when they are not feeling uncomfortable. Committee members agreed medical students are getting mixed messages with regard to attending examinations at the scheduled time.**

### Human Structure and Function (HSF)

Dr. Norrander reported HSF is a combination of embryology, anatomy and histology and she provided a breakdown of student performance in the three components of the course. Students as a whole did well, one reason may be because to receive honors in the course students have to achieve 90% in each of the three components. There were 52 students who achieved Honors. Dr. Weinhaus noted for AY12-13 Honors was granted to only the top 15% of students and once at about mid-term in the course that they realized they couldn't get to that level, they were content with not working as hard as they could in the remainder of the semester. In the 12-13 semesters because of the ranking of the top 15%, students were less willing to share notes and other kinds of collaboration. There were 6 students who failed this year, 3 of them also failed SMP.

Dr. Norrander noted that a portion of the evaluation of the course is somewhat integrated; it does include a segment of questions specific to each of the three components to assess students' feedback on the three areas. The HSF course evaluations were very favorable across all three components and students agreed that the objectives of the course were well met. Dr. Wienhaus noted that the TAs were scored very highly and students respond well to their work. The workshops include surgical procedures done by clinicians and cover orthopedics, laparoscopy, and intubation and several other areas. He noted the point of these lab experiences isn't to teach procedures but to show that anatomy is necessary to perform procedures. Also to illustrate that without the basic science knowledge of anatomy bad medical actions can take place. Professionalism is a focus as students work together in a team based setting and is re-emphasized across all areas of the Anatomy component.

To aid integration of embryology and gross anatomy, Dr. Weinhaus includes embryology in the dissection notes, so while students are involved in dissecting they are guided to think about embryology (evaluated at 3.5 by students). Generally Embryology is rated at about 3.5, which is somewhat due to the very short amount of time (nine hours) applied to the topic within the overall course.

All course directors reported having very good experiences with both Brian Woods and Aliyu Ojarigi in preparing their course materials, Black Bag, organization, and overall support of their course needs. Dr. Weinhaus talked about the importance of having their Black Bag structure and content cloned to the new AY13-14, this has been a concern in moving from 1 year to the next; a great deal has been lost in the past. He recommends strongly transfer of data in fact, content and assets be done especially well transitioning from the current year to AY2015. The TAs are Year 3 and 4 medical students and they are evaluated very highly by year-1 students. Another aspect of Embryology in the course are the lab opportunities to view the development of fetal characteristics in the lab specimens. Histology has a core group of faculty who have taught for a number of years, which is an added advantage. Dr. Katz noted that these 2 courses cannot be taught in the same fashion by covering the same systems at the exact same time.

Assessments include practice quizzes, list of questions answer in their own study process. Dr. Robert Sorenson has developed a virtual microscope at [histologyguide.org](http://histologyguide.org) that allows students to search the web site for the topic they are wanting to study. Eventually quizzes will be developed to accompany the freeware, this tool provides the opportunity to recognize specific normal tissue through searching mechanisms. And there are four practice lab exams and they begin using it at about 4 weeks into the course.

### Areas for Concern

With regard to the timing of the SMP exam, at about 1 quarter of the way through the course, students worked very little on their Anatomy/Histology and ECM course assignments and preparation for the lab segments of Anatomy. The week following they had to play catch-up on HSF and ECM and were not able to handle all of the work they needed to have ready. This also occurred at about three fourths of the way through the semester. The most challenging material in the course is during the week students are preparing for SMP's mid-course exam.

### Changes and Improvements

- For embryology better information on the scope of goals, it will be covered more thoroughly in orientation.
- There are a total of 3 basic science lectures and three surgeons who do lectures. Surgeons bring a large number of slides that pertain to their specialty and are not particularly helpful. The goal is to get students to understand the importance of embryology and that basic focus is being met. The plan is to replace the clinician lectures with basic science lectures to accomplish that goal.
- To prepare for Gross Anatomy labs which were developed in 2009, the disadvantage is that the slides are of poor quality, the lectures are very well done. The technology is very poor (recordings were done in 2009). He will attempt to do some copying and combination of technology to produce a better teaching tool for student use.
- There is also a goal to better align integration of radiology and dissection.
- Clearer communication to students that the workshops and activities are required attendance.

**Next Meeting March 7, 2014**