1) Curriculum Pedagogy

The UK College of Medicine (UKCOM) currently uses a number of different pedagogies to teach content throughout the M1 and M2 academic years. Given the emphasis the LCME has placed on interactivity in the classroom, the Committee strongly endorses the importance of maintaining interactive class sessions across all campus sites.

a) Lecture
Approximately 45% of class time currently consists of lecture-based content. This is perhaps the most easily transferable across sites. A telecommunication platform that supports two-way communication is necessary. An additional facilitator will need to be present at all campus sites to alert the instructor to questions and issues from the other sites.

b) Pre-class content delivery (Flipped classroom knowledge delivery)
With increasing utilization of flipped classroom pedagogy, a larger amount of material (videos, text, slides) will be available through Canvas. This is easily transferable across sites.

c) Case-Based Learning (CBL) – discussion of clinical cases often using interactive questions
Ideally, case based discussions would be performed at each site by faculty members at each site who all have jointly created and share the case material. As an alternative, a single presenter could deliver material to multiple sites. This would likely require the TurningPoint® (or similar) platform to facilitate discussion and questions, and a highly interactive telecommunication platform.

d) Team-Based Learning (TBL) – student team discussion of cases or problems
TBL is also discussed below in assessment and is a form of interactive learning. It presents the same challenges as CBL. Subcommittee recommends the same best practice and alternative.

e) Classroom Discussion – classroom discussion of concepts or questions
It presents the same challenges as CBL and TBL. Subcommittee recommends the same best practice and alternative.

f) Anatomy Lab Prosection
Anatomy lab prosections should be performed at each site by trained anatomists. This would require an anatomy lab and at least 2 cadavers at each site (one man and one woman) and possibly more depending upon the number of students. This could be supplemented by videoconferencing between sites to facilitate comparable teaching points. No alternatives to an on-site anatomy lab for prosection demonstrations were considered adequate to the Subcommittee.

g) SonoSim Workshop

The Subcommittee recommends that each campus site would require on-site ultrasound-savvy clinicians to teach these sessions. Further, a ratio of one clinician to 10 students is recommended. Thus, the scheduling of these sessions would be dependent upon the number of local campus clinicians and the availability of adequate size rooms for the number of students. These are scheduled as asynchronous activities, so campus sites have flexibility in scheduling these sessions depending upon the availability of clinicians and rooms. No alternatives to an on-site workshop were considered adequate to the Subcommittee.

h) Introduction to Clinical Medicine Small Group Discussion
Small group discussions would have to occur at all sites with a size of approximately 8 students with one clinician and one behavioral scientist (strong background in communication and ethics, such as a psychologist, sociologist, etc.). No alternatives to on-site small groups were considered adequate to the Subcommittee.

i) Introduction to Clinical Medicine Physician Shadowing
Currently, each M1 student spends approximately 16 hours with a physician for a longitudinal clinical experience. In addition, students each do a selective experience of 12 hours with any clinical practitioner (physician, therapist, counselor, etc.). Each regional site would require sufficient resources for the number of students.

j) Introduction to Clinical Medicine Service Learning
Currently, each M1 student spends approximately 15 hours in community-oriented experiences, including a mandatory 4 hours working in community service at the Salvation Army Student Clinic. Each regional site would require sufficient resources to provide this experience for the number of students in the program, including a clinical community service opportunity.

k) Interviewing Skill Practice
Currently, all M1 students practice interviewing skills through small group activities with their preceptors and interviewing "labs," both using simulated patients (SPs) to portray an array of symptoms and demonstrate the extent of historical issues. SPs are specifically trained to provide targeted feedback on interviewing and communication skills, but also portray a variety of more challenging scenarios (breaking bad news, the angry patient, the emotional patient, counseling for behavior change, etc.). The Subcommittee recommends that each site develop an SP program in conjunction with the UKCOM SP program to support these activities. As an alternative, the Subcommittee considered the use of real patients, faculty portraying symptoms, other students portraying symptoms, etc. Although these can provide rich experience in obtaining historical information, it is unclear whether these can mimic the emotional experience and targeted challenging scenarios mentioned above. In addition, consistency and uniformity of feedback on clinical skills would have to be assured, which would likely require faculty or staff trained on communication skill expectations and standards.

l) Physical Exam Workshops

Currently, M1 and M2 students participate in a series of workshops across multiple courses. Each regional site would require a dedicated physician and space to replicate these workshops on site. The Subcommittee would recommend approximately 20 students working with a single faculty member in each workshop. Each lab would have to be equipped with sufficient exam tables for student pairs to practice physical exam techniques on each other. This requires extensive coordination between the physical exam preceptors at all sites to ensure standardization of exam technique. No alternatives to an on-site workshop were considered adequate to the Subcommittee.

m) Advanced Clinical Medicine Small Group Mentoring
The **Advanced Clinical Medicine Preceptorship** component currently consists of three 2.5-hour sessions with an advanced clinical instructor, approximately eight students, and a standardized patient. Each regional site would require one or more dedicated physicians to provide instruction, direct observation and feedback on students' skills guided by three to four clinical cases. This requires extensive coordination between the advanced clinical instructors at all sites to ensure standardization of exam technique. No alternatives to an on-site workshop were considered adequate to the Subcommittee.

The ICM 2 - **Small Group Preceptorship** consists of a minimum of six 2-hour sessions, with three to four students assigned to one clinical preceptor. Each regional site would require multiple dedicated physicians to provide instruction, direct observation and feedback on students' skills on physical examination, clinical reasoning, oral presentations of patient information and written documentation. No alternatives to an on-site workshop were considered adequate to the Subcommittee.

n) Advanced Clinical Medicine Clinical Reasoning Workshop
Currently, this in-class activity is conducted using a TBL format. The Subcommittee would recommend that clinical reasoning workshops be offered at each site by a faculty member who coordinates the same material between campuses. As an alternative, this workshop could be broadcast via telecommunication network. It presents the same challenges as the previously discussed classroom CBL, TBL and discussions.

o) Advanced Clinical Medicine Ultrasound Workshop
Currently, each student attends three separate workshops using real ultrasound machines to perform live scanning, guided by a faculty member with expertise in ultrasound scanning and interpretation. Each regional site would require a bedside ultrasound trained physician and bedside ultrasound equipment. No alternatives to an on-site workshop were considered adequate to the Subcommittee.

2) Assessments

The UK College of Medicine (UKCOM) currently uses multiple assessment platforms throughout the first two years for both formative and summative assessments. Most assessment platforms are flexible enough to support implementation across regional campuses.

a) Multiple-Choice Examinations
Almost all courses in the M1 and M2 years use two or more summative multiple-choice examinations on the ExamSoft® platform. The best practice is to have a computer lab with sufficient program-maintained computers for every student on a specific campus to take the exam at the same time. An alternative, and the one currently used in the UKCOM, is to use students' personal laptop computers to download and administer the exam. The Committee endorsed a single examination start and end time as the standard across campuses, requiring further consideration of different time zones and the optimal schedule for exams. It was also noted that minor technological issues occur regularly, most likely related to the use of personal laptop computers, so that information technology (IT) expertise would be necessary at each site at the beginning of every ExamSoft® exam. In addition, a proctor would have to be present in the examination room at each campus site.

b) Quizzes
Distinct from Multiple-Choice Examinations, quizzes in the UKCOM are most often given via the Canvas platform. The best practice is to have a computer lab with sufficient program-maintained computers for every student on a specific campus to take the quiz at the same time. An alternative, and one currently used in the UKCOM, is use students' personal laptop computers and online streaming of the quiz. The Committee recommended flexibility of start and end times depending upon the structure of the quiz.   Further, given the online streaming of quiz, adequate wi-fi band width must be assured at all campus sites to ensure the integrity of exam administration.

c) Practical Examinations
Practical examinations of anatomical content are used in three different UKCOM courses during the M1 academic year. Recently, these have been converted to digital images and have been administered using the ExamSoft® platform. So, the same considerations apply to practical examinations as to multiple-choice examinations.

d) Post-Examination Reviews
By UK policy, all courses must have scheduled class time to review examination content when exams are not returned to the possession of students (SREC: 1/23/2012). Since these sessions are almost universally confidential, they require the same security procedures as the actual examination/quiz administration. Sessions would require password protected live streaming without recording. Sessions would only be broadcast into classrooms at each campus site and would require education staff proctoring of the review. In addition, faculty endorsed that any telecommunication system should support written electronic communication, so that students could ask questions without having to use a microphone. Alternatively, local experts at each site could review the entire exam and answer questions. Although this may be ideal, faculty

felt that the integrative nature of the UKCOM exams usually precludes a single or even a small group of faculty from being able to review an entire exam.

e) Objective-Structured Clinical Examination (OSCE)
The UKCOM currently uses an OSCE format with simulated patients (SPs) to assess student skill in physical examination and interviewing skills. Some of these exams also include assessment of student clinical reasoning through the writing of a note, an assessment, a plan or answering targeted questions. Although multiple alternatives to SPs were considered, the committee endorsed that SPs should be the standard for assessment of physical exam and interviewing skills. This would require either each campus site to develop an SP program or would require the SP program at the main campus to travel and administer OSCEs at the regional sites. Currently, student written responses during OSCEs use the Canvas platform, so should be readily available across campus sites given adequate wi-fi band width. SP exams also require a simulated environment, so each campus site would require a set of rooms fully equipped with the customary patient examination equipment. The number of rooms is dependent upon the number of students at the campus site and the examination procedures. For example, if the current UKCOM SP program was providing the SPs for the exam, consideration would have to be given to travel time, adequate breaks and the examination timing. Currently, the longest exam is 2 hours in total duration, so most SPs could provide 8 hours of exam time in a day with all of those considerations. Thus, a 40-student campus would require 10 rooms for OSCEs to conduct the exam over a single day. Alternatively, if local SPs were used at each campus, fewer rooms would be necessary, but coordination of SP training across sites would have to be assured.

f) Team-Based Learning (TBL) Exercises for Grade
Several courses at UKCOM use the TBL format for interactive learning. Although most count only for participation, several require student answers to targeted questions which then contribute to their overall grade, often with weighting similar to a quiz. The Subcommittee endorsed two alternatives. First, faculty at each campus site could conduct each TBL with the understanding that a single set of TBL questions and content would be identical across all sites. Second, the TBL at the main campus would be teleconferenced with the other campus sites. With the recent changes in the TurningPoint® platform to a web-based system, it can provide a single platform for real-time student answers to the same TBL across all campus sites. However, concern was raised regarding the interactivity of a professor at a single site answering questions and interacting with students at other sites. IT telecommunication platform would need to have multiple screens, one to allow viewing of the slides, another to allow simultaneous viewing of the faculty presenter, and additional screens for each site that would allow visualization of individuals. In addition, faculty endorsed that any system should support written electronic communication, so that students could ask questions without having to use a microphone. All TBLs would require staff to proctor the exercise, ensuring the integrity of TBL procedures, and would also require IT staff availability to troubleshoot any TurningPoint® or telecommunication issues.

3) Summary

a) Faculty Resources – This represents the minimum faculty needs considering that any content that is possible to teleconference from the main campus is performed.

i) Clinical faculty members with expertise in patient communication, interviewing and ethics for Introduction to Clinical Medicine and ethics discussions in Advanced Clinical Medicine.

	Class Hours	Preparation Hours	Total Hours
20 student class (3 groups)	190	190	380
30 student class (4 groups)	258	258	516
40 student class (5 groups)	330	330	660

ii) Behavioral science faculty members with expertise in patient communication and ethics.

	Class Hours	Preparation Hours	Total Hours
20 student class (3 groups)	166	166	332
30 student class (4 groups)	228	228	456
40 student class (5 groups)	290	290	580

iii) Clinical faculty members with expertise in physical examination and interpretation (physical exam workshops, advanced clinical preceptorship, small group preceptorship)

	Class Hours	Preparation Hours	Total Hours
20 student class	118	118	236
30 student class	178	178	356
40 student class	222	222	444

iv) Anatomist faculty members with expertise in gross anatomy and neuroanatomy.

	Class Hours	Preparation Hours	Total Hours
20 student class (3 groups)	30	240	270
30 student class (4 groups)	40	320	360
40 student class (5 groups)	50	400	450

v) Clinical faculty members able to take students for shadowing experiences

	Total Hours
20 student class	560
30 student class	840
40 student class	1120

vi) Clinical faculty members with expertise in bedside ultrasound

	Class Hours	Preparation Hours	Total Hours
20 student class	96	192	288
30 student class	134	268	670
40 student class	172	344	516

b) Staff Resources

i) Education staff for proctoring of exams, exam reviews and TBL exercises are necessary for the duration of these activities.

ii) SP Program or an equivalent educational option. The current anticipated needs for SP activities in the 1st and 2nd year are as follows:

	Training	Interview	Physical	OSCE	Total Hours
20 student class	145	236	24	170	575
30 student class	205	346	32	225	808
40 student class	235	452	40	300	1027

c) IT Resources
   i) Full-time staff expertise is needed at each campus site to troubleshoot telecommunication problems and facilitate cross-campus communication.
   ii) Adequate wi-fi band width to support multiple devices per person at any given time at each campus classroom
   iii) Telecommunication platform that supports both multiple-screen video and written electronic communication. Concern exists with Zoom being able to clearly view the speaker (close-up) and the other classroom locations.
   iv) Continued support for ExamSoft® or an equivalent web-based examination platform
   v) Continued support for Canvas
   vi) Continued support for TurningPoint® or an equivalent cloud-based interactive polling software platform
d) Outstanding issues/concerns
   i) The recommendation of the Subcommittee is for predominant synchronous learning experiences across campus sites. This requires careful consideration of the timing of class experiences. For example, classes and classroom reservations on the Lexington campus are currently from 8 am to 12 pm EST. This would require classes for the Bowling Green campus to begin at 7 am CST. The time difference also affects other activities such as exams, review sessions, small groups and meetings. Optimal timing must consider the issues at each campus.

M1-M2 Subcommittee
Chris Feddock, chair, Mike Piascik, co-chair
Ken Crawford (WKU)
Shane O'Keefe (MCBG)
Raven Piercey
Scott Morehead
Deb Erickson
Paula Arnett
Michelle Lineberry
Brian Higgins
Andy Ayoob
Wayne Cass
Paul Murphy
Brandy Lawson