STANDARD 7: CURRICULAR CONTENT

1. Evaluate whether there is sufficient representation in the curriculum of topics from the biomedical, behavioral, and social sciences and of medical ethics. Is there evidence to make the determination of adequacy and appropriateness of content coverage? (7.1, 7.7)

There is sufficient representation of these topics in the curriculum. 28 of the 29 biomedical, behavioral, social sciences and medical ethics topics are taught as part of required integrated courses. 3 topics, genetics, behavioral science and human development/life cycle, are also taught separately as independent required courses. 23 of these topics are taught and assessed in year 1, 24 in year 2, and 20 during year 3/4. 7 topics, biochemistry, genetics, immunology, microbiology, global health issues, health care financing, population-based medicine, are taught and assessed in the years 1 and 2. 4 topics, biomedical informatics, medical socioeconomics, patient safety and pain management, are taught and assessed during years 3/4. The remaining 17 topics are taught and assessed throughout the continuum of years 1 through 4.

Survey of our graduates' opinions regarding sufficient representation of these topics supports the adequacy and appropriateness of the majority of content coverage. For the AY 2013-14, the percent of Emory University respondents to the AAMC Graduation Questionnaire rated 7 of 11 basic science topics above the national benchmark data for excellent or good. Breakdown of USMLE performance by subject over time shows the students excel across all topics. For the AYs 2012- 13 and 2013-14, the percent of our student survey respondents exceeded national benchmark for agreeing/strongly agreeing (aggregated) that they were prepared to begin residency in the areas of fundamental understanding of issues in social sciences of medicine and understanding the ethical and professional values that are expected of the profession.

Emory students graduating in 2013 reported lower rates than the national average for sufficient integration in a few basic science topics across the preclinical courses. Specifically, gross anatomy, immunology, microbiology, and pharmacology were identified as needing better integration, delivery and/or organization. While there is student dissatisfaction in these areas, there are no objective outcome measures indicating that these topics are weakness in the curriculum. Immunology, microbiology and pharmacology, showed improvement during the AY 2013-14 as compared to AY 2012-13. Complementary/alternative health care is not specifically covered in the curriculum. However for the AYs 2012- 13 and 2013-14, the percent of our student survey respondents approached the national benchmark data for agreeing/strongly agreeing that they were confident in their knowledge and skills to assess the health practices of a patient who uses alternative therapies.

2. Comment on whether the curriculum adequately covers each of the levels of care and phases of the human life cycle. (7.2)

The faculty ensure that the curriculum includes content and experiences related to each organ system, each phase of the life cycle (newborn, child, adolescent, adult, geriatric), and in various levels of care (continuity, preventative, acute, chronic, rehabilitative, end-of-life, and primary).

The small group sessions aid in the students' abilities to develop differential diagnoses and treatment plans and to recognize and interpret symptoms and signs of disease. The organ-based organization of the preclinical curriculum prepares the student for addressing health-related issues involving all organ systems. In 2012 and 2013 Emory graduating students agreed that the basic science content provided to them was relevant preparation for their clerkships at a level above the national average. They also agreed and strongly agreed that the basic science was integrated well into required clinical experiences at a level above the national average. An asset of the education in the clinical curriculum is the variety of clinical sites, which include a county hospital, tertiary referral hospitals for adults as well as children, a VA hospital, community hospitals, health centers, and private practices. In the AAMC General Questionnaire, the students have rated their instruction as better than the national average in all areas: Diagnosis of disease, Management of disease, Health maintenance, Disease prevention, and Health determinants. Notably 100% of the students for the 2012-2013 and 2013-2014 time periods rated their instruction in diagnosis of

disease as "Appropriate", rather than "Inadequate" or "Excessive". In addition, the students rated their ability to discuss treatment options with a patient with a terminal illness 10% higher than the national percentage.

Rehabilitative care does not occur as an independent or integrated course. Rehabilitative issues are covered during the Applications Phase in core clerkships of Medicine, Pediatrics and Surgery. The pre-clerkship and clinical curriculum objectives includes normal human development and the life cycle, adolescent medicine, geriatrics, continuity of care, and end of life care. Students gave lower evaluations to the Aging and Dying module.

3. Evaluate the adequacy of experiences that permit students to directly apply the scientific method and to become familiar with the basic principles of clinical and translational research. (7.3)

There is sufficient representation of these topics in the curriculum. Students learn to apply the scientific method and the basic principles of clinical and translational research during the 5-months Discovery Phase of the curriculum. This period includes a formal course (Short Course on Clinical Research and Translational Experiences in Science - SoCRATES) that incorporates various teaching methods. Ethical research principles are taught in SoCRATES and in the mandatory Collaborative IRB Training Initiative Program. The Discovery Phase also includes a student-selected, hypothesis-driven, research project supervised by a mentor. Results are reported in various ways including scientific manuscripts, presentation or poster at the Medical Student Research Day or other scientific meetings. The vast majority of students feel that research opportunities and resources are available across a wide range of disciplines from basic to translational science to public health. They think the Discovery Phase is successful in providing a structured time to conduct research. They also feel that the abundance of dual degree students is a testimonial to the robust interdisciplinary academic research environment.

The majority of students valued the skills that they learned during the Discovery Phase and felt that they had adequate support for finding a research mentor although 19% felt that requirements for project mentors placed restrictions on available opportunities and made finding a mentor unnecessarily difficult. Some of the M3 students expressed some difficulty in scheduling planning meetings with their mentors. Additionally, the students felt that the dedicated website to find mentors can be improved in terms of ease of use and navigation.

4. Evaluate whether the curriculum includes sufficient experiences to ensure that students develop skills in medical problem solving and evidence-based clinical judgment. (7.4)

Evidence-based clinical judgment and medical problem solving are integrated throughout the four-year curriculum. A key strength is the introduction of the learning theory behind critical thinking and the application of this theory in a structured environment during Foundations and again during Applications. In Foundations, there is a specific module that focuses on the learning theory behind clinical decision-making and includes four problem-based learning cases in concert with the disease module that the students are studying at the time. During Foundations, evidence-based medicine (EBM) is taught through lectures and small groups. The rating of the EBM curriculum in Foundations is low compared to other modules at 6.9/10. While students cite high quality faculty and materials, they felt that the timing of the course with the other modules detracted from learning.

In the Applications phase, EBM knowledge is reinforced during their internal medicine clerkship by working with a medical librarian to analyze a clinical question and in their pediatrics clerkship by working with a medical informatics specialist at morning report. Students spend the majority of their time during the Applications phase caring for patients. They participate in real time medical problem solving supported by evidence-based medicine and the experience of their teams. This is reinforced as students take on more responsibility and autonomy during their required sub-internships in Translations. These skills are reinforced during the Internal Medicine Clerkship where students participate in decision-based learning exercises in which they work in small groups to correctly solve an unknown case by "ordering" tests from a faculty facilitator to help them refine the differential diagnosis they

generated from the provided history and physical. During Capstone students participate in an EBM workshop lead by an institutional EBM expert.

The structure of the curriculum deliberately teaches core concepts of evidence-based medicine and medical problem solving early on in both classroom and small group settings. The biggest strength is the students' experiences during Applications and Translations where they are exposed to a wide variety of patients and patient care settings with enough autonomy and responsibility to hone their problem solving skills. This is supported by the fact that 95% of students were satisfied with the problem-based learning small groups for the clinical reasoning portion of Foundations, 99% of M3 and M4 students were satisfied with the adequacy of their education to diagnose disease, and 95% with the adequacy of their education to manage disease. The sub-internships rank among the highest of the clinical clerkships averaging 8.66 out of 10 with specific feedback that students like the increased clinical responsibility and autonomy during their Internal Medicine sub-internship. Emory students excel in all areas of USMLE Step 2 CK.

5. Evaluate whether the curriculum adequately prepares student to recognize and appropriately address the consequences of common societal problems. (7.5)

Throughout the four-year curriculum common societal problems are well taught, assessed, and reinforced. Specific examples of five common problems (Obesity, Substance-related disorders, Violence, Injuries & Tobacco Use) that have a strong societal component are outlined in the DCI. Student assessment consists of formative and summative OSCEs during, and at the end, of the Foundations and Application Phases, written exams and participation and direct observation of counseling. Besides a small group session during Prologue I, students are also given a 2-hour lecture specifically focused on social medicine during the Ambulatory Care Block. Furthermore, all students rotate through six hospitals with patient populations from diverse socioeconomic backgrounds which encompass common societal problems. Through their core clerkships at all these sites, students observe first-hand how various social determinants of health can impact a patient's disease presentation and outcome by directly participating in their care. The ISA data showed that 92% of students felt prepared for treating patients from diverse backgrounds. There are limited opportunities to extend these experiences into a better understanding of population-based disease management and team-based care.

6. Evaluate how med students are being prepared to communicate appropriately with patients and others. Is the curriculum preparing students to understand and work effectively with and identify their own biases related to patients from a variety of backgrounds? (7.6, 7.8)

There is sufficient evidence that medical students are being prepared to communicate appropriately with patients from a variety of backgrounds. During years 1 and 2, students develop their communication skills through problem-based cases in small group sessions. The acquired communication skills are practiced in the first 12 months as students attend a primary care clinic bi-weekly (outpatient clinical experience: OPEX) and during the Application Phase when students rotate through inpatient and outpatient clinical environments where they receive hands-on instruction with patients, caregivers and healthcare providers. Students' communication and interpersonal skills are assessed throughout all phases of the curriculum with a variety of methods including direct observation of clinical encounters (OSCE), peer feedback and formative feedback from faculty and residents. However, students find inconsistency in the quality and usefulness of the evaluations and assessments in some areas of the curriculum. Although communication with patients, nurses, and physicians is emphasized in certain rotations interactions with other healthcare professionals (laboratory techs, physical and occupational therapist) is not readily evident.

Our clinical environments serve populations with a wide range of socioeconomic and cultural backgrounds fostering development of appropriate student communication skills. In the ISA, students praised their preparation for treatment of patients of diverse backgrounds with a 92% satisfaction. Students are also exposed to peers with a variety of cultural backgrounds so they learn to identify their own biases. Within the first month of year 1, students have a 1

week clinical immersion which marks the last time they will see medicine as outsiders and permits firsthand observation of communication among patients, caregivers, families, peers, non-physician healthcare providers and physicians. The experience is followed by a reflection exercise that allows them to see how their own social and cultural milieu can create potential biases when they interact with patients. During the Ambulatory Care Block in the Application phase, the students are required to complete Implicit Association Tests (self-assessments) to identify their own biases. Lastly, three mandatory Capstone sessions on gender and cultural biases are provided.

7. Evaluate whether medical students are being prepared adequately to function collaboratively in health care teams. Are there objectives related to collaborative team care and are sufficient experiences related to these objectives included in the curriculum? (7.9)

Concepts of inter-professional education (IPE) and team based care are taught throughout the four-year curriculum. There is a logical progression of skills from awareness of differing professionals and communication in the pre-clinical years, to conflict resolution and leadership of inter-professional teams in the clinical years. Emory has pre-clinical, clinical, and capstone exposure that includes both case-based discussions, observation of team based care, and to a lesser extent direct participation in an inter-professional teams. Learning objectives specific to inter-professional education can be found in the following places: The summary page of the three inter-professional team training days (ITTD), Objectives 3 & 4 in the Geriatric IP case, and the learning objectives in the capstone interdisciplinary team training day (see DCI data).

Alumni perceptions about inter-professional opportunities are well above the national average with 98% of student alumni surveyed on the Graduate Questionnaire saying they had opportunities to learn with students from other disciplines (national average only 78%). The ISA analysis also showed that 92% of current students were also satisfied with the inter-professional education at Emory. The ISA data did report that 22% of M2s were dissatisfied or somewhat dissatisfied with the ITTD. Students felt disheartened because although they were all at the same grade level in their respective programs, medical students had relatively little clinical exposure compared to their 1st or 2nd year counterparts in other programs. Doing only case-based simulations did not have the same impact as being able to work together or observe teams at the point of care. Several inpatient clerkships are structured so that inter-professional exposure goes on informally (rounding with teams or formal teaching that include students and/or professionals from the PA, pharm-D and nurse midwifery program), though there are no formal IPE learning objectives associated with those activities except for those outlined in the Capstone module (see DCI data). Our analysis also showed that there is a lack of exposure to team based care in outpatient settings (only a one hour lecture on PCMH during the Ambulatory clerkship).