Creating Collaborative Care (C³)
A Quality Enhancement Plan (QEP)

MUSC

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The focus of the Quality Enhancement Plan (QEP) for the Medical University of South Carolina (MUSC) is interprofessional education, and has been entitled Creating Collaborative Care (C³). This initiative responds to the fact that today's health care system is highly complex and involves interaction of many different health care professionals in providing optimal patient care and advancing biomedical research. C³ will establish the framework for redesigning MUSC's formal and informal educational programs whereby future graduates not only continue to excel in the academic challenges of their own chosen profession, but additionally excel in today's complex interprofessional health care system.

The educational offerings of MUSC have been distinguished by the rigor and intensity of the programs in each college: dentistry, graduate studies, health professions, medicine, nursing, and pharmacy. While their excellence is well established and recognized for preparing individual providers of clinical care and biomedical research, there is a growing concern nationally that the continuum of health care could be greatly improved. As suggested by an increasing number of articles, most notably in a series of reports by the Institute of Medicine (IOM), an improved health care system should be safe, effective, patient centered, timely and efficient. One of its four recommendations deals with preparing the health care workforce with emphasis on interprofessional teamwork as a necessary approach to increase patient safety and improve health care delivery.

MUSC was chartered in 1824 as the first medical school in the southern United States. The five sister colleges were established on various dates between 1881 and 1966. As with most academic medical centers, the additional colleges were added to the enterprise because of the value their professions contributed to the clinical practice of medicine. Each subsequent educational program was established with a great deal of autonomy, owing primarily to its unique specialty and accreditation requirements. Because of increased dependencies and complexities among the specialties, there is increased recognition that the educational and training aspects of each specialty should be modified to better prepare students for careers that will rely increasingly on teamwork and teambuilding skills. C³ is MUSC’s approach to building an academic and institutional culture that not only appreciates and values the need for interprofessional training, but that provides opportunities for effective integration of this knowledge and skill into health care delivery or research prior to graduation.

From an educational perspective, C³ offers a continuum of knowledge and teambuilding experiences, from acquisition, to application, to demonstration. It represents a dynamic process of student engagement in increasingly more sophisticated and expansive opportunities promoting and advancing interprofessional education while receiving their formal education. Each step of this continuum is motivated by four inter-dependent goals:

**Goal 1:** Students will acquire a set of defined teamwork competencies -- knowledge, values, attitudes, personal and interprofessional skills, principles, beliefs and standards

**Goal 2:** Students will acquire knowledge, including the values and beliefs, of health professions different from their own discipline that will enable them to define interprofessional health care delivery or research

**Goal 3:** Students will apply their teamwork competencies in a collaborative interprofessional health care delivery or research learning setting

**Goal 4:** Students will demonstrate their teamwork competencies in a collaborative interprofessional health care delivery or translational research contexts.
These goals will be achieved through a carefully structured organization that focuses on four primary domains: formal curriculum; informal extracurricular activities; the Teaching Scholars Academy; Clinical Effectiveness and Patient Safety. Each of these domains will have a Team Leader who will report to the C^3 Director having overall responsibility for the initiative within the Office of the Associate Provost for Education and Student Life. A proposed C^3 Council, chaired by a senior academic officer, will be established to assist the C^3 Director in reviewing progress, resolving major barriers, and addressing major changes/improvements. In addition, an Assessment Team will be composed of institutional researchers to provide objective analysis to issues requested by the Associate Provost, the C^3 Council and/or the C^3 Director. One of their primary tasks will be to assess the progress of C^3 regarding QEP standards.

MUSC faculty, staff, and students understand C^3 as an essential pathway to improving education and tie the provision of health care at all levels with all professions working together. If successful, it may also serve as a model for other academic health centers.

II. Rationale for the QEP

In 1999, the Institute of Medicine (IOM) initiated efforts to assess and improve the quality of health care in the nation. Its report, To Err Is Human: Building A Safer Health System, documents the pervasiveness of preventable medical errors within the health care system. Citing the decentralized and fragmented nature of the health care delivery system as a significant contributory factor to medical errors, the report concludes that the majority of errors are not a result of individual irresponsibility, but rather of faulty systems and processes that lead individuals to make mistakes or fail to prevent them. The report recommends a redesigned health care system with emphasis on prevention of errors and proposes specific strategies for improvement.

A follow-up report, Crossing the Quality Chasm: A New Health System for the 21st Century, was released in 2001. This report grapples with the fact that consistent, high-quality medical care is not available to all persons within the U.S. In addition, patients are harmed too frequently in a system that fails to deliver anticipated health benefits. The cumbersome series of processes that constitute our health care delivery system are “...uncoordinated, requiring steps and patient handoffs that slow down care and decrease rather than improve safety.” The report presents a strategy for redesigning the health care delivery system built around the core need for health care to be safe, effective, patient-centered, timely, efficient, and effective. A number of basic principles are proposed for redesigning the system including several changes in the environmental structure and processes in which health care professionals and organizations work. They involve:

- applying evidence to health care
- using information technology
- aligning payment policies with quality improvement
- preparing the workforce.

In preparing the workforce, one of the major recommendations suggests redesigning the way in which health professionals are trained. Specifically, “…more stress on teaching evidence-based practice and providing more opportunities for interdisciplinary training” are two ways in which the educational system can be revitalized in the future.

The needs for improvements in health professions education are further addressed in an additional IOM Report, Health Professions Education: A Bridge to Quality (2003), written by the Committee on the Health Professions.
Education Summit. This committee developed a new vision for health professions education which stressed the importance of interprofessional teams. These teams would deliver patient-centered care that emphasizes evidence-based practice, embraces quality improvement approaches, and effectively uses informatics. Health professions schools that embrace the new vision will graduate practitioners with competencies to “cooperate, collaborate, communicate, and integrate care in teams to ensure that care is continuous and reliable.”

Our QEP of Creating Collaborative Care (C³) directly responds to the IOM mandate to improve health professions education through developing graduates’ ability to work in interprofessional teams.

McPherson et al. describes interprofessional education (IPE) as healthcare professionals learning together, learning from each other, and/or learning about each other’s roles in order to facilitate collaboration. When individuals from different professions and even health care organizations come together to address patient needs, they offer cohesive practice and begin to alleviate the fragmentation within the current health care system.

Interprofessional practice that enhances patient-centered care is best conceptualized as a continuum of learning, with exposure and purposeful introduction to interprofessional collaboration occurring early in the learning process of a particular profession and extending into continuing professional development. Effective IPE fosters students’ abilities to value other professions’ contributions to health care practice. IPE is not intended to remove differences between professions, but to clarify different approaches to a clinical situation, and then integrate knowledge and skills to provide the most beneficial care to a patient. Hammick has described potential outcomes from interprofessional learning as

- Level 1: learners’ reactions
- Level 2a: modification of attitudes
- Level 2b: acquisition of knowledge / skills
- Level 3: change in behavior
- Level 4a: change in organizational practice
- Level 4b: benefits to patients.

The effectiveness of IPE is difficult to assess because program evaluations must meet the criteria of having a robust experimental design and demonstrating benefit to patient outcomes. One inherent challenge with evaluating IPE is that such efforts are attempting to address long-term behavior change. Based upon evaluation of the current IPE literature, the limited evidence suggests that effective IPE may benefit from longer duration, work-based experiences, and attention to the stage of development of the learner. Given that appreciation for other professions’ roles within health care is intrinsic to the success of IPE, it has also been suggested that learning should occur across a continuum, utilizing different, shared learning experiences.

Furthermore, successful implementation of IPE for collaborative practice requires recognition that change in the broader institutional culture must occur. Sporadically implementing learning activities throughout an academic program will not achieve the necessary success for long term attitudinal shifts, nor will increasing the opportunities for students to apply their knowledge and skill if the broader learning environment does not support IPE and its intention to create collaborative care. As with all organizational change, effective IPE occurs when institutional leadership sets and supports the direction for IPE and when sufficient human and fiscal resources are allocated to enact change.

NOTE. We prefer to use the term interprofessional rather than interdisciplinary as we believe it more accurately reflects the nature of our institution and our goals for the QEP. “Interdisciplinary” may be viewed as a much narrower and older term that refers to activities within a single profession, such as interdisciplinary collaboration between internists, cardiologists, and cardiothoracic surgeons, for a patient undergoing by-pass surgery. Within the literature the terms interprofessional and interdisciplinary are often
used interchangeably although the latter term appears to be evolving as a better understanding of the subject emerges. We will use the former term exclusively in the context of the QEP.

### III. DEVELOPMENT OF THE QEP

#### Background History of MUSC

When the Medical College of South Carolina was chartered by the South Carolina legislature on December 20, 1823, it became the tenth medical school in the United States and the first in the Southeast. Since its beginning, the University has awarded more than 27,500 degrees and has grown from a small medical school to a major university health sciences center comprised of an 800-bed referral hospital and teaching center and six colleges: the College of Medicine, the College of Pharmacy (1881), the College of Nursing (1883), the College of Dental Medicine (1952), the College of Graduate Studies (1965), and the College of Health Professions (1966).

The institution was founded by the Medical Society of South Carolina, a group of Charleston physicians, but became a state institution in 1913, in part to address deficiencies noted in the landmark Flexner Report. In the 94 years since, this commitment by the State to support health education as an important branch of its public education system has witnessed campus growth from a single building to the current 76 acres housing more than 89 structures.

Such growth was gradual up to the 1940s, but phenomenal since -- particularly over the past 40 years. Student enrollments expanded from 571 in 1965 to almost 2,500 students in the fall of 2006 (excluding post doctoral residents and fellows); full time faculty grew from approximately 200 to over 1,200 with about 250 part time faculty and over 1,500 volunteer or community faculty; the library now offers more than 200,000 volumes, approximately 15,600 e-journals, and a vast array of online databases & knowledgebases; and more than $189,000,000 of extramural grant awards were received in the 2005-2006 fiscal year. During 2005-06 the Medical Center attracted over 31,500 inpatient admissions and 730,000 outpatient registrations.

Through affiliations and special programs, MUSC coordinates the health education activities of numerous regional hospitals and provides opportunities for its students to acquire training in various community settings. It has informal agreements with accredited institutions of higher learning in South Carolina concerning the undergraduate preparation of students for health careers.

In 2007, the MUSC Medical Center will complete the first phase of a Hospital Replacement Project; this phase involves a 156-bed, 641,000 square foot expansion. This facility will give the institution the capacity to provide a growing and aging patient population with the most advanced care available anywhere. It will also bring cutting edge technology, such as a completely digital informatics system, into a health care facility that serves as the clinical training site for many of our students in the health professions.

Appendix A provides additional information on the history of the Medical University, and has been referenced in the SACS Web page at http://www.musc.edu/history.html. The URL for information on the hospital addition is http://www.muschealth.com/newhospital/.

#### Uniqueness of Free-standing Academic Health Centers

A current issue facing Academic Health Centers (AHCs) is the need to create meaningful
approaches to educational experiences that draw on the interrelatedness of various health care providers in ensuring optimal and safe health care delivery. There is no single approach to achieving this goal, but any pathway must begin with factual information and communication to those individuals who are entering a health profession. AHCs are uniquely situated in being able to energize the related activities inherent in their tripartite mission of education, research and public service.

There are but a handful of AHCs that are either independently chartered or have significant autonomy; MUSC is one of these free-standing AHCs. In general, the free-standing AHCs have fewer encumbrances in maintaining the status quo of traditional academic curricula, and are uniquely focused on an objective assessment of how well the education system is serving the interests of patients, caregivers, and society. Because of their unique situation, AHCs can take on the IOM’s challenges to build a safer health system as described in each of their six defined aims – health care should be safe, effective, patient-centered, timely, efficient and equitable. At the core of the series of reports from the IOM is the need for meaningful interprofessional experiences beginning with the matriculation of students into the health sciences. MUSC is well positioned to implement interprofessional education, and in turn address the IOM recommendations for improving health care, as an AHC and through the planned C³ structure and activities.

**QEP Topic Considerations**

The MUSC University Education Advisory Committee (EAC) accepted the challenge to function as the Institutional Learning Needs Committee and generate a list of potential QEP topics at their February 2005 meeting. The EAC, composed of the six college academic deans and the director of graduate medical education, was chaired by the Associate Provost for Education and Student Life. Each college was asked to poll their faculty, staff and students to identify its specific needs and projects, and these responses were circulated to the EAC prior to its meeting (Appendix B). The Committee’s summary of these collective ideas included:

- incorporating educational technology to improve student learning
- fostering a strategic and collaborative approach to faculty development for the improvement of student learning
- enhancing the cultural competence and improve the diversity of the faculty and student body
- expanding interdisciplinary/interprofessional learning experiences.

The subsequent report (Appendix C) attempted to summarize these ideas into a single statement as follows: “Develop an interprofessional academic infrastructure for faculty development and student learning, incorporating the use of advanced technology.”

The report, including several approaches, was subsequently presented to a wide array of MUSC faculty, staff, and students. Through discussion, debate and compromise, a consensus was reached on a single QEP concept that would most effectively address and satisfy the needs of all academic components. This concept was initially ratified at the October 2006 meeting of the SACS Reaffirmation Oversight Committee after being considered by, among others, the Student Government Association, the Faculty Senate, the Deans’ Council, the President’s Council, and several of the SACS working groups including numerous times by the SACS Steering Committee and the QEP Committee.

The QEP Committee was charged with completing and presenting subsequent drafts for finalization by the Reaffirmation Oversight Committee (membership listed in Appendix D).

An additional consideration for the QEP selection was the “fit” with MUSC’s mission and vision statement. The University’s mission statement reflects the commitment to education of learners. Specifically, the mission statement commits to “preserve and optimize human life in South Carolina and beyond through providing an environment for learning and discovery through education of health care professionals and
biomedical scientists, research in the health sciences and provision of comprehensive health care.”

As a publicly supported academic health sciences center, this commitment has been further clarified by defined values and vision statements which are an integral part of the dynamic University Strategic Plan and include the following priorities that were of particular relevance in considering the QEP focus:

- support optimal health care through emphasis on training interdisciplinary teams of a wide range of professionals
- stress innovation and advancement of knowledge in all efforts, with faculty on leading edge of development and introducing emerging technologies and broader applications
- belief that mission component aspects (education, research, and patient care) are complementary activities with excellence in one expanding capacity in others to achieve ultimate goal of being at forefront in each
- value opportunity to collaborate with other organizations, expanding interdisciplinary capacities while lending our unique strengths for partners to expand their research capacity
- hold all employees accountable to the highest standards of personal and professional conduct
- make educational offerings more broadly available with special attention to the use of innovative technology in support of an educational environment increasingly diverse, interdisciplinary and emphasizing high standards of personal conduct.

The University’s Mission Statement strongly supports and helps ensure that all curricula are designed to prepare students, residents, and fellows with a set of core competencies (knowledge, skills and values) that shall include the ability to work effectively in interprofessional teams. It focuses efforts on IPE at the heart of the institution, and provides the impetus for promoting fundamental institutional culture change. Furthermore, the QEP topic complements current work at the university level for translational research and MUSC’s planning for a Clinical and Translational Science Award (CTSA; NIH-NCRR 1 P20 RR023498-01).

**Existing Interprofessional Initiatives at MUSC**

The following are some of the current educational programs that help underscore MUSC’s commitment to improving student experiences in an interprofessional setting. While the number of such activities is large, the fragmented and uncoordinated nature of these efforts limits their effective impact.

Several institutional activities provide critical building blocks for development and implementation of C³. The Provost’s Task Force of Deans Report on Enhancing Interprofessional Education in 1999 identified creation of an **Interdisciplinary Scholars Program** as a strategy to enhance interprofessional education at MUSC. The Presidential Scholars Program was initiated in August, 2001 with 36 students from 11 disciplines representing all six colleges. The program is now in its seventh year, with cumulative involvement of 248 students to date. This non-credit two-semester program is facilitated by an interprofessional group of faculty and provides an intensive experience in interprofessional collaboration for selected students. Students exit the program achieving three of the major goals of C³ -- the development of team skills, a better understanding and appreciation of other disciplines, and the opportunity to demonstrate these attributes in a learning environment. Additionally, students develop a shared understanding of the social, environmental and political factors that influence health care disparities. The Presidential Scholars Program has been a learning laboratory for the development of successful strategies for achieving the goals of C³, but it has been limited in scope to a modest number of faculty and students with limited ability for scale-up.
In 2004, an Interprofessional Task Force (ITF) was established as agreed upon by the Deans Council. Chaired by the Director of the South Carolina Area Health Education Consortium (SC AHEC). The ITF includes representatives from each college and the Provost’s Office. Among the recommendations from the committee was the establishment of a university-wide activity, Interprofessional Education (IPE) Day.
The first IPE was held in January 2006 for all first year students of all colleges at MUSC. The half-day session for 583 students included interprofessional small group discussions in multiple locations on campus, facilitated by a faculty member and a student from different colleges.

Students were asked to brainstorm their suggestions for improving interprofessional understanding and those ideas were captured and summarized to help inform the QEP initiatives (see Appendix E). Student feedback was sought through focus groups and surveys to learn how the IPE day activities could be improved, as well as what additional follow-up activities would be appropriate to enhance interprofessional education at MUSC. On January 19, 2007, an expanded second IPE day occurred as a full day with required activities for all second and first year students, to include a speaker and small group case study analysis. Facilitators attended a three hour training on effective team facilitation and student feedback was again obtained through discussions and surveys. Although IPE was successful in reaching a larger audience, we recognize that a three-hour intervention once a year is insufficient to achieve the goals of the QEP.

In Spring 2006, the Interprofessional Task Force also completed a university-wide survey of interprofessional attitudes among faculty, students and staff to collect some baseline assessments in preparation for C3. The analysis demonstrated some significant differences in the three groups surveyed and these differences will help mold our future improvement efforts (see Appendix F).

Students have demonstrated their enthusiasm for initiating interprofessional activities as well. The campus held its first CLARION Competition in Fall 2006, an initiative that originated within a student leadership society in the College of Pharmacy. CLARION is an interprofessional team competition hosted by the University of Minnesota. The goals of the program are to promote interprofessional leadership development and to focus attention on enhancing health care quality and safety. The goals are based on the premise that providing safe, high-quality patient-centered care will require breaking down the usual isolated, disciplinary approach to patient care and health professional education. Supported by the Student Government Association and the Provost’s Office, thirteen teams of students competed with a winning team selected to represent MUSC at the national competition in April, 2007.

The University has a number of interprofessional electives that have been successful in creating interprofessional dialogue and interaction. Among the most germane has been the SCRIPT (South Carolina Rural Interdisciplinary Program of Training) coordinated and sponsored by the SC AHEC. This five-week summer program brings health professional students from MUSC and other colleges and universities together to live and work in rural communities throughout South Carolina. In addition to completing clinical rotations within their professions, students complete a week-long classroom session, work in teams to complete community projects, and meet weekly in interprofessional team conferences.

On a regular basis, students from all MUSC colleges participate together in community health fairs, serve weekly in local clinics for the underserved, and teach healthy life habits to school age children under a program called MUSC Gives Back. Other campus-wide,
student sponsored events, such as collecting food, clothing, and personal toiletry items for homeless and migrant populations, address social concerns in the community. During the last academic year, 847 MUSC students donated 11,800 hours to over 160 Low country agencies. Established in 1993, MUSC Gives Back has engaged thousands of student volunteers representing all six MUSC Colleges, participating in many programs and contributing hundreds of hours of volunteer support to benefit non-profit agencies and community outreach programs. Many of these programs are interprofessional in nature and there will be a focus on increasing those numbers through the C³ initiative.

Students from all six MUSC colleges (Dental Medicine, Graduate Studies, Health Professions, Medicine, Nursing, Pharmacy) at MUSC joined together in recognizing World AIDS Day 2006 both on the medical campus and also in the Charleston Tri-County area. Campus activities included a kick-off lunch lecture by an infectious disease specialist faculty member, followed by a two-hour informational fair. Organizations from all six colleges sponsored booths that provided educational materials on HIV/AIDS as it pertained to that particular organization’s interests. Students participated in the 17th Annual Tri-County Candlelight March to remember those loved ones living with or affected by HIV/AIDS. While educating the community on HIV/AIDS and advocating for those affected by this disease, this interprofessional event provided opportunity to foster relationships across health care professions at MUSC.

Another student initiated interprofessional activity is CARES (Community Aid Relief Education and Support), an MUSC-sponsored and student-run community clinic located at the East Cooper Community Outreach Building in Mount Pleasant. Information about the clinic which opened in August, 2005 can be found on the web at: http://www.thecaresclinic.org/. CARES has a specific mission (among others) to:

- foster cooperation of students, healthcare professionals, and members of the community in addressing health care disparities
- use an interprofessional approach to addressing health care issues.

Students from multiple health professions participate in providing care to patients served at the clinic, including pharmacy, physical therapy, and nursing. Dental care referrals are also provided.

Integration of Existing Interprofessional Activities under C³

The existing programs listed above were initiatives that contained many IPE elements. A number of these programs were initiated several years ago to satisfy a perceived shortcoming or to enhance a particular offering in a discipline or group of disciplines within a specific college. Some of the more recent initiatives were designed to enhance IPE. By definition, they have created university-level programs designed to engage student constituents university-wide. C³ is an attempt to provide the IPE experience previously limited to a few professional fields to a wider cohort of health care students. C³ provides opportunities for all students to engage in interprofessional learning and collaboration through required curricular experiences and an expanded array of extra-curricular offerings. Importantly, C³ addresses faculty development needs that are critical to successful IPE efforts. It also purposefully integrates institutional healthcare simulation resources, providing ideal strategies for IPE and assessment. C³ provides a framework on which various programs and activities on campus can contribute in a coordinated fashion to the university-wide effort in IPE.

C³ is viewed as an umbrella or overarching program to:

- integrate IPE into the mainstream of our traditional discipline-specific programs
• coordinate the activities of existing programs possessing interprofessional elements

• foster the expansion of interprofessional elements within student life and extra-curricular offerings

• foster faculty knowledge, skills and values in IPE, in turn benefiting students’ learning in curricular and extra-curricular offerings and through positive role modeling

• capitalize on institutional healthcare simulation resources for coordinated interprofessional learning and assessment

• help assure adequate funding for interprofessional program development and continuity.

IV. THE PLAN

Purpose and Goals

Creating Collaborative Care (C³) is a plan to promote an institutional culture, learning environment, and infrastructure that enhances MUSC graduates’ abilities to participate as effective team members in interprofessional collaborative health care delivery or research. Graduates will be recognized as national leaders for their ability to collaborate in interprofessional health care delivery or research.

The next section discusses the conceptual underpinnings to C³. Creating teamwork competencies for health care practitioners and biomedical scientists is clearly a transformational process, one that occurs over time and through increasingly sophisticated and expansive learning opportunities. The four goals of C³ reflect this transformation; each goal builds upon the previous goal and generates an overall interdependence among the four goals.

Goal 1: Students will acquire teamwork competencies

Goal 2: Students will acquire knowledge, including the values and beliefs, of health professions different from their own discipline that will enable them to define interprofessional health care delivery or research

Goal 3: Students will apply their teamwork competencies in a collaborative interprofessional health care delivery or research learning setting

Goal 4: Students will demonstrate their teamwork competencies in collaborative interprofessional health care delivery or translational research contexts.

Conceptual Approach to C³

When considering the nature of health professions education and the need for increasing IPE for students at an AHC, one may engage both formative and transformative learning – not only what students know but also professional and interpersonal skills usually acquired through learning and training, an attitude that effects behavioral change and cognition, and the principles, standards and quality (values) that guide the action of effective teamwork.

The term “competency” is defined throughout the C³ Plan as the complex educational norm derived from a defined knowledge base, a set of

The term “health care” is defined broadly in this plan and includes investigational research as well as health administration.
how they come to know, how they take in and make sense of their learning experiences. The work of Kegan on personal and professional intellectual development, and particularly his work on ways of knowing, provides a theoretical foundation on which to build a creative and practical framework for launching and developing an IPE initiative that will bring about changes in the institution’s culture, learning, environment, and infrastructure.

In Figure 1, we propose a conceptual framework for advancing IPE and its resultant teamwork competencies. In the center of the figure is a learning spiral that represents the dynamic process of engaging in increasingly more sophisticated and expansive opportunities that promote and advance IPE. The spiral is bounded on one side by a sequence for developing team work competencies through which learners progress to become health care practitioners or biomedical scientists, and on the other side by a transformational process along which learners move from the most absolute ways of knowing to the most contextual. These concepts provide the design criteria for defining the scope and sequence of IPE at MUSC so that graduates will ultimately function as effective members of diverse teams that guide the delivery of health care in the 21st century, and afford ample opportunity for meeting each of the four goals of C³. These concepts will be used in educating students and faculty about interprofessional collaboration and the C³ and will serve as design criteria for making decisions about the scope and sequencing of C³ activities.

The learning spiral is used to suggest a sense of expanding growth and maturation throughout the students’ education. The sweep of each loop is enlarged as learning expands from tightly bound or structured environments to more open and real-life environments in which health care delivery and science take place. In each loop of the learning spiral three phases (acquisition-application-demonstration) flow into each other to allow the development of increasing levels of complexity. At the end of each loop in the spiral there is a period of transition which allows the student to reframe previously learned concepts in new and different contexts over time. Based on the work of Anderson and Krathwol in revising Bloom’s Taxonomy for better use as a tool for curricular planning, instructional delivery, and assessment, acquisition refers to learning associated with remembering and understanding, application refers to learning associated with applying and analyzing, and demonstration refers to learning associated with evaluating and creating. When applied to IPE, these three phases underpin the learning inherent in the progression of personal development necessary for building team competencies.

A fundamental premise of this model is that students move through four key phases on their way to becoming practitioners and scientists. The phases are consonant with the C³ goals. In meeting Goal 1 and having situated themselves
within the context of their own professions and disciplines, students prepare themselves to become a team member, becoming more cognizant of others with whom they will likely interact within a team context. Foundational teamwork competencies that support a common ground of understanding are acquired and students have opportunities to envision future collaborative possibilities that will give voice to their ways of knowing. In meeting Goal 2, students progress to situations in which they begin to think as practitioners and scientists within their chosen fields and within an interprofessional team context. In meeting Goal 3, competencies must be put into practice in novel, problem-specific situations that challenge students to reason through solutions using their newly acquired knowledge. Finally, in meeting Goal 4, students progress to real contexts in which they act as practitioners and scientists to make sense of what they are going not only within their own fields but also within a team context.

The transformational process shows how learners develop different ways of knowing over time. As described by Baxter-Magolda, experience influences how learners move from absolute knowing, in which knowledge is absolute in the sense of being either right or wrong, more certain than uncertain, the purview of instructor not peers, and is garnered by obtaining information. Learners then progress to transitional knowing, in which knowledge may be uncertain in some areas, is acquired by understanding information, dependent on the instructor to direct its application to different contexts, and explored with peers. Students next move to independent knowing, in which knowledge is largely uncertain, held by both instructors and peers, comes from thinking for oneself, and requires being open-minded allowing others to have their own beliefs. Ultimately, the professional arrives at contextual knowing, in which knowledge is uncertain but can be judged, is acquired by synthesizing expert opinion, existing evidence, the experiences of self and others, and depends on standing outside one’s own experience. As IPE is designed to promote movement through this transformation process, learners increasingly will develop maturity in their teamwork competencies and transform the way in which they think and reason as practitioners and scientists.

C³ IPE will be enriched by using a variety of curricular and extracurricular learning environments that foster development of teamwork competencies, including the diverse settings of classroom, Web, simulation, laboratory, clinical and community. Effective faculty engagement with students will be supported by the C³ and will thus instill an educational culture that values and models interprofessional collaboration in healthcare and research.

**The Four Domains of the Plan**

In C³, four discrete but collaborative domains are proposed to carry out the goals. The activities of each domain will be guided by the conceptual model described above. The domains represent the primary areas of C³ operational activity and are the foundation for planning, establishing effective organizational governance, guiding implementation, establishing standards to evaluate progress and assessing the need for improvement. Each domain captures an IPE component and builds on existing or developing resources, programs, and activities already established at MUSC. They use the components that can best advance IPE without diminishing their original college or program specific charges. Together, the domains work synergistically to achieve the goals and overall purpose of C³.

The Curricular Domain addresses IPE within academic programs to ensure that all students have learning and assessment experiences focused on IPE. The Extracurricular Domain complements and enhances the academic environment by purposefully infusing interprofessional collaboration throughout student life and organizations, and extracurricular activities. This domain fosters and supports an institutional interprofessional environment and importantly recognizes that IPE should not be isolated to the classroom and
formal instruction, but must be imparted within the hidden or informal curriculum manifested through student life and organizations, and extra-curricular activities. The Teaching Scholars Academy Domain addresses student learning in the Curricular and Extracurricular Domains by educating faculty about IPE. Faculty must have knowledge, skills and values of interprofessional collaboration in order to effectively teach IPE in curricular offerings, to support students in extra-curricular activities, and to role-model throughout the educational environment. The Clinical Effectiveness and Patient Safety Domain provides purposeful coordination of institutional healthcare simulation experiences to support student interprofessional collaboration, learning and assessment, and to assist faculty development efforts in IPE.

C³ Curricular Domain. The C³ Curricular Domain is charged with identifying, developing and facilitating implementation of curriculum-based initiatives for C³. This Domain supports the C³ learning environment and infrastructure through:

• addressing fundamental curricular issues (i.e., academic calendars, course scheduling, discipline specific accreditation requirements, credit hours) across the six colleges and eighteen academic programs

• identifying C³ core competencies and topic areas

• developing strategies and activities to embed IPE within academic programs’ required curricular activities

• refining strategies to assess and evaluate students’ learning of interprofessional collaboration competencies within the curriculum.

In addition, this Domain will be responsible for:

• establishing a university-based committee, to guide the work of the C³ Curricular Domain

• developing university-based C³ core competencies, obtaining necessary approvals, as appropriate

• identifying topic areas to serve as foci for interprofessional learning, such as cultural competency, ethics, bioterrorism, prevention, population health, and patient safety. (Note, as C³ progresses and health care needs change, topic area foci may also change to insure curricular activities are addressing current and future health care needs.)

• identifying and developing strategies to integrate into each academic program required activities fostering students’ C³ core competencies within structured learning contexts

• integrating into each academic program classroom and applied opportunities for students to utilize their C³ core competencies in a health care delivery or research context.

C³ Extracurricular Domain. The C³ Extracurricular Domain is charged with developing and implementing extracurricular initiatives within C³. It builds upon existing extracurricular MUSC activities (e.g., the Presidential Scholars program, community outreach programs, CLARION Competition) to enhance the opportunities for students to work and interact across the different health professions.

The C³ Extracurricular Domain supports the C³ learning environment and infrastructure through:

• developing extracurricular learning activities that address interprofessional collaboration

• developing extracurricular assessment tools that assess interprofessional collaboration

• promoting interprofessional groups of students, faculty and staff working collaboratively on projects of mutual

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For purposes of definition, extracurricular initiatives refer to (a) student activities, planned and unplanned, formal and informal, (b) student life and student organizations, (c) student service and community outreach programs, and (d) student seminars, grand rounds, speakers, special programs that are not for course/program credit.
interest, including student governance, the promotion of health and wellness, research and community service

• emphasizing interprofessional understanding and the application of developing collaboration skills in student programs and activities.

In addition, this Domain will be responsible for:

• establishing a university-based C³ Extracurricular Committee aligned with the existing education and student support infrastructure, including Student Government to develop strategies and methods to infuse and enhance interprofessional collaboration

• developing an inventory of existing interprofessional extracurricular activities and their contribution to the C³ goals

• purposefully infusing interprofessional understanding and skills of collaboration as aims in ongoing student activities and services

• developing new initiatives that maximize student interaction across disciplines on substantive issues related to high quality collaborative care

• developing strategies to evaluate effectiveness of the extracurricular components on students’ development of core competencies in collaborative care.

C³ Teaching Scholars Academy Domain. The C³ Teaching Scholars Academy Domain is charged with developing and implementing initiatives to enable faculty to more effectively educate students to work collaboratively in health care delivery and research. Educating students to work together across health disciplines will require faculty to develop and/or adopt educational processes consistent with C³ goals. Faculty, trained within their own discipline, are often uncomfortable with an interprofessional approach to student learning or lack the knowledge to teach within it. Faculty development for IPE should focus on changes in attitudes, improved understanding of the roles and functions of other health care professionals, and skill development in the areas being taught to students.

This Domain supports the C³ learning environment and infrastructure through:

• educating faculty about IPE and providing opportunity for knowledge and skill acquisition and attitudinal shifts to occur

• establishing interprofessional teams of faculty members creating curricula and content materials

• developing and sharing responsibility for faculty improvement both in terms of the knowledge of interprofessional content as well as effective teaching strategies and modalities for presenting curricular materials

• inserting itself as a formal structure that supersedes the traditional college “silos” and promotes IPE and coordination.

This C³ Domain is established through the work of the MUSC Teaching Scholars Academy (TSA) in concert with the MUSC’s Apple Tree Society. The Apple Tree Society seeks to foster dialogue and activity related to the scholarship of health professions teaching through campus and national partnerships. Its activities involve faculty from all colleges and approaches issues focused on faculty development across the University.

The Teaching Scholars Academy is a proposed organizational structure dedicated to the enhancement of faculty expertise in health professions education. A more thorough description of the University TSA and the Apple Tree Society can be found in Appendices G and H, respectively.

The C³ Teaching Scholars Academy Domain will be responsible for:

• conducting a needs assessment to determine faculty IPE needs
• conducting a literature review and research from peer institutions (a) defining the content area of IPE, including specific faculty development issues, and (b) assessing IPE, including perceived institutional barriers and supports

• initiating faculty development programs (seminars, grand rounds, workshops) to address faculty educational needs in IPE

• promoting and supporting faculty scholarship in IPE

• assessing the effectiveness of the Teaching Scholars Academy C3 faculty development programs.

**C3 Clinical Effectiveness and Patient Safety Domain.** The C3 Clinical Effectiveness and Patient Safety Domain is charged with developing and implementing clinical effectiveness and patient safety initiatives focused on improving collaborative team-oriented processes for students, residents and faculty.

Use of simulation with standardized patients (actors trained to portray patients), manikins (including those with responsive heart sounds, respirations, oximeter readings, and pulses) and high-fidelity computer graphics is viewed as an important instructional and assessment technique within health professions education.\(^{18}\) Simulation mirrors, anticipates or amplifies real situations, and during simulated experiences, learners can develop and practice skills in a sufficiently realistic task environment. It provides an opportunity to teach how to manage performance in low and high stress situations and teams are able to perform under a variety of life-like conditions. In simulated learning settings, individual learners or teams of learners can receive immediate feedback on their performance, repeat their performance to develop skills, and practice high risk procedures where if something goes wrong, there is no risk.

For health professions interprofessional education, simulation offers the unique opportunity to mirror situations where multiple health professionals work together in a health care situation, such as an emergency call, disaster response, critical care, and general medical care. With respect to assessment, simulation offers the opportunity to assess a learner’s knowledge and skills in a sufficiently realistic low or high risk situation tailored to educational goals.

As part of the statewide South Carolina Clinical Effectiveness and Patient Safety initiative, the MUSC Healthcare Simulation Center is being established. A related Health Sciences South Carolina (HSSC) “Center of Economic Excellence” was initiated in 2006. The HSSC Collaborative was founded by MUSC, the University of South Carolina, Greenville Hospital System, and Palmetto Health with the vision of improving the health and economic wellbeing of South Carolinians through a coordinated effort to advance health sciences education and research. The MUSC Healthcare Simulation Center is one of four healthcare simulation centers in South Carolina that are currently part of the statewide Clinical Effectiveness and Patient Safety Center (CEPSC). The CEPSC Center will be endowed by at least $17 million from state and matching funds, and will have up to $13 million of infrastructure investments. It will house a variety of healthcare simulation tools, from partial task trainers to sophisticated human patient simulators (manikins). The administrative structure of the center will promote its use across and among all healthcare professions on campus. A more detailed description of the Center may be found in Appendix I.

The MUSC Healthcare Simulation Center is a proposed unit that is the keystone to the Clinical Effectiveness and Patient Safety Domain. This unit will support the C3 learning environment and infrastructure through:

• the establishment of a C3 Clinical Effectiveness and Patient Safety Domain Committee to address the learning and assessment activities that promote interprofessional collaboration

• the development of learning and assessment activities that promote interprofessional collaboration.
Structure Responsible for Implementing and Administering C³

To achieve its goals, the C³ will be structured as an umbrella program with the distinct domains listed above and a steering / advisory group called the C³ Council. Each of the four Domains will identify objectives and measures that address some or all of the C³ goals, sharing the overarching goal of facilitating the education and training of health care professionals and researchers who are equipped to work collaboratively. The C³ Council will be responsible for oversight of C³ development and implementation, including the work recurring within each Domain, review of pertinent evaluation data, and recommend changes for improvement. An organizational chart for C³ is presented in Appendix J and may be modified as the implementation of C³ evolves.

The C³ Director will be responsible for overseeing the administration and implementation of the C³ program and he/she will report to the Associate Provost for Education and Student Life. The Director will receive guidance from the C³ Council and assistance in overcoming hurdles that require decisions made at a higher level.

C³ Council. The C³ Council will be composed of selected university leaders and chaired by the senior academic officer of MUSC, the Provost. The C³ Director will be on the Council as an ex officio, non-voting member. The Associate Provost for Education and Student Life will participate in the Council’s deliberation. Because C³ may have issues aligning its anticipated activities with the existing and traditional decentralized activities of the various colleges, the deans of each of the six colleges will be invited to serve. Other faculty and/or staff may be invited to serve.

Initially, the Council will meet on a regular basis to review progress in implementing C³, to resolve major barriers that develop during implementation, to establish timelines, and discuss changes for improvement. The Council will provide oversight and guidance, and will ensure that the Plan is fulfilling MUSC’s and SACS’ expectations.

C³ Implementation Committee. The C³ Implementation Committee will be composed of the leading members of the four C³ Domains, the deans’ representatives, major academic support services, and others as appropriate. The C³ Director will chair the Committee. The Committee will meet on a regular basis to establish the detailed operational issues inherent in establishing a complex plan of this magnitude. They may break into working subgroups to be able to more effectively address certain issues.

C³ Assessment Team. The C³ Assessment Team will be composed of University personnel experienced in academic program assessment. The team will involve institutional research personnel who have analytic and assessment skills to approach the issue being requested. Evaluation requests may originate from the Associate Provost, C³ Director, C³ Council, and/or the C³ Implementation Committee. Membership on the Assessment Team will be selected pending the subject area of the request.

Major Personnel. The C³ Director is expected to be a 50% or greater FTE senior faculty member with responsibilities for all activities associated with C³. In addition, the C³ Director will require a part-time administrative assistant who will provide assistance to the various C³ Domain Team Leaders listed below and upon the approval of the C³ Director.

Each of the four C³ Domain Team Leaders will report to the C³ Director on matters affecting C³ and are members of the C³ Implementation Committee.

- C³ Curricular Domain Team Leader:
  This individual is responsible for the activities of the C³ the Curricular Domain. This person works with the C³ Curriculum Committee and appropriate individuals in each college and academic program to identify, develop, and facilitate implementation of curricular strategies and
activities to implement the C³ Curricular Domain activities and programs (25% time).

• **C³ Extracurricular Domain Team Leader:** This individual is responsible for the activity of the extracurricular Domain. This person works with the C³ Extracurricular Committee, appropriate persons in student support services, representatives from each college and academic program and the C³ Curricular Domain Team Leader to identify, develop and facilitate implementation of the C³ Extracurricular Domain’s activities and programs (25% time).

• **C³ TSA Domain Team Leader:** This individual is responsible for oversight of the C³ activities of the Teaching Scholars Academy and associated programs. This individual works with the C³ Director, and within the TSA to identify, develop and facilitate implementation of TSA C³ activities and programs (25% time).

• **C³ Patient Safety and Clinical Effectiveness Domain Team Leader:** This individual is responsible for oversight of C³ clinical effectiveness and patient safety activities and programs. This individual works with leadership and personnel in the MUSC Healthcare Simulation Center, the Center for Clinical Evaluation and Teaching (CCET), and other simulation learning and assessment venues on campus. Additionally, this person works with other Team Leaders and individuals in each college and academic program. In concert with these individuals, the C³ PSCE Team Leader’s effort will be focused on identifying, developing and facilitating implementation of clinical effectiveness and patient safety C³ activities and programs (25% time).

**Evaluation and Assessment of C³**

To guide the development and implementation of the QEP, a quality improvement approach will be applied. Working with a quality improvement framework will assure that data are collected and analyzed to assess changes and to determine where additional changes are needed for optimal success. A process of continual improvement will be applied throughout the implementation of the QEP, allowing for rational planning and changes to occur. An iterative cycle of assessing implementation progress and making changes for improvement to future strategies and activities will be used.

The improvement model that has been selected for evaluating and improving the QEP is the Langley, Nolan, and Nolan Foundation for Improvement Model. This model has been used successfully in many organizations for enacting, evaluating, and informing changes for improvement. A brief description of the model follows.

The model for improvement consists of two parts. The first part requires that improvement participants to carefully respond to three fundamental questions:

**Part 1**

1. **What is trying to be accomplished?** (In other words, what are the goals?) In this case it is to ensure all students acquire interprofessional collaboration competencies during their education at MUSC.

2. **How will it be known that a change is an improvement?** (In other words, what measures or data elements can be identified and collected to inform if progress is being made toward intended goals?)

3. **What changes can be made that may lead to improvement?** (Brainstorm possible changes and select one to try.)

**Part 2**

After selecting a change, Part 2, the PDSA Cycle, begins. The PDSA Cycle is a “trial and learning” Cycle. Here changes are tested and their effects are evaluated.
The P stands for Plan. In this phase, a thorough plan for the changes intended to implement is developed, including planning who, how, and how often data is collected.

Once the change and data elements are identified, the D phase of the cycle begins – Do. The change is made and data is collected.

After a preplanned period of time, the S Phase begins – Study. Data is analyzed and studied, and it is determined if they indicate that the change implemented is accomplishing what was intended.

If the data reveal the plan is working and progress is being made toward stated goals, the change continues, possibly adding future changes to enhance progress. This is known as the Act part of the cycle. If it is believed that progress is not being made, barriers to success are identified and changes are redesigned.

Continuous improvement is a concept that recognizes that not all changes lead to the improvements expected. To promote an institutional culture, learning environment, and infrastructure that enhances our graduates’ abilities to participate effectively as interprofessional team members, continual planning and testing learning activities, evaluating their success, and using the results of the evaluation to determine further changes is imperative. Continuous improvement operates under the assumption that changes to the organizational culture do not happen overnight. Progress is achieved through persistent effort and attention, and through implementing small changes that gradually build to a substantial effect.

In Table A, some examples of the instructional methods and activities proposed are listed in relation to the four goals of C3. The instructional methods cited are not intended to be exhaustive, but rather, serve as examples of those indicated in discussions with academic program leaders and the QEP planning committee.

Table B outlines the anticipated outcome measures and Table C describes the parameters for evaluating the Domains of C3. In addition to each Domain assessment, the overall program will be assessed annually to determine those interventions that are making positive differences (Table D).
<table>
<thead>
<tr>
<th>Goals</th>
<th>Examples of Instructional Methods and Campus Activities</th>
</tr>
</thead>
</table>
| **Goal 1:** Students will acquire teamwork competencies. | • Discussions of what is effective teamwork using specific case models  
• Presentations of elements of teamwork competencies  
• Student’s engagement in small group learning activities: case based discussions, patient oriented problem solving exercise, problem-based learning  
• Electronic teamwork modules  
• Student participation in Presidential Scholars Program  
• Student participation in college student organizations  
• Student participation in MUSC Gives Back offerings |
| **Goal 2:** Students will acquire knowledge, including the values and beliefs, of health professions different from their own discipline that will enable them to define interprofessional health care delivery or research. | • Case based problem discussions focused on collaborative interprofessional health care or research  
• Projects examining health professions different than their own  
• Shadowing health professionals or researchers different than their own profession  
• Attendance at Grand Rounds of professions other than their own  
• Attendance at Interprofessional Day Grand Rounds and seminar series  
• Electronic interprofessional modules  
• Student participation in Presidential Scholars Program |
| **Goal 3:** Students will apply their teamwork competencies in a collaborative interprofessional health care delivery or research learning setting. | • Case based problem discussions, involving students from multiple professions, focused on collaborative interprofessional health care or research  
• Simulated clinical learning experiences involving multiple health professions, such as simulations focused on communication, reducing health care and/or medication errors, medical emergency team training, basic skills training, ACLS/BLS courses  
• Student participation in CLARION competition  
• Electronic interprofessional modules |
| **Goal 4:** Students will demonstrate their teamwork competencies in collaborative interprofessional health care delivery or translational research contexts. | • Participation in interprofessional clinical rotations  
• Participation in translational research projects  
• Participation in interprofessional community projects  
• Participation in CARES Clinic or Crisis Ministries Clinic  
• Participation in SCRIPT program |
### Table B. Goal-related C³ Outcome Measures.

<table>
<thead>
<tr>
<th>Goals</th>
<th>Anticipated Outcome Measures</th>
</tr>
</thead>
</table>
| **Goal 1:** Students will acquire teamwork competencies. | 1) Student performance on assessments, as established by each program, requiring:  
• Description of effective teamwork competencies (i.e., essay exams, oral exams, multiple choice exams)  
• Demonstration of effective teamwork competencies (i.e., evaluations of small group performance, peer assessment, clinical skills assessments within profession, etc.)  
2) Peer feedback on team skills in extracurricular activities |
| **Goal 2:** Students will acquire knowledge, including the values and beliefs, of health professions different from their own discipline that will enable them to define interprofessional health care delivery or research. | 1) Student performance on assessments, as established by each program, requiring:  
• Definition of interprofessional health care delivery or research and its value. (i.e., essay exams, oral exams, written reports, reflective essays)  
• Discussion of the value added by interprofessional collaboration to their own profession. (i.e., essay exams, oral exams, written reports, reflective essays)  
2) Student performance on a validated scale assessing interprofessional attitudes (i.e., “Revised Interprofessional Perception Scale”\(^{20}\), Attitudes Toward Health Care Teams\(^{21}\), Readiness for Interprofessional Learning Scale\(^{22,23}\), Attitudes to Health Professionals Questionnaire\(^{24}\)) |
| **Goal 3:** Students will apply their teamwork competencies in a collaborative interprofessional health care delivery or research learning setting. | Student performance on assessments, as established by each program, requiring:  
• Application of teamwork competencies with other health care professionals in a collaborative interprofessional health care delivery or research learning setting. (case-based discussions, CLARION competition type activity, clinical simulations, research project development and/or completion). |
| **Goal 4:** Students will demonstrate their teamwork competencies in collaborative interprofessional health care delivery or translational research contexts | 1) Student performance on assessments, as established by each program, requiring:  
• Demonstration of teamwork competencies in collaborative interprofessional health care delivery or translation research context  
• Discussion of the added value of effective teamwork to health care or translational research (essay exams, oral exams, reflective essays, reports).  
2) Student performance on institutionally developed assessments to measure attitudes during interprofessional work, (i.e., items such as “appreciates the contributions of team members,” “values working collaboratively.”)  
3) Student performance on a validated scale assessing interprofessional attitudes (i.e., “Revised Interprofessional Perception Scale”\(^{20}\), Attitudes Toward Health Care Teams\(^{21}\), Readiness for Interprofessional Learning Scale\(^{22,23}\), Attitudes to Health Professionals Questionnaire\(^{24}\)) |
### Table C. Domain Evaluations: Domain Outcomes, Instruments and Use of Information.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Assessment Instruments</th>
<th>Use of Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C³ Curricular Domain</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student satisfaction with C³ learning experiences</td>
<td>Standardized course evaluation items assessing satisfaction with C³ learning experiences</td>
<td>Review by C³ curriculum committee to recommend changes in curricular activities</td>
</tr>
<tr>
<td>Student satisfaction with C³ performance assessments</td>
<td>Standardized evaluation items assessing satisfaction with C³ assessment experiences (i.e., simulations, standardized patient exams)</td>
<td>Review by C³ curriculum committee to recommend changes in assessment activities</td>
</tr>
<tr>
<td>Number and types of required learning activities within each academic program</td>
<td>Count of number and type of required learning activities within each academic program</td>
<td>Review by C³ curriculum committee to determine if appropriate number and type of activities achieved based on proposals to C³ curriculum committee</td>
</tr>
<tr>
<td><strong>C³ Extracurricular Domain</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number and types (inventory) of C³ extracurricular campus activities</td>
<td>Count of number and type of C³ extracurricular campus activities</td>
<td>Review by C³ extracurricular committee to monitor and suggest new extracurricular activities</td>
</tr>
<tr>
<td>Number and types of student by profession participating in C³ extracurricular activities</td>
<td>Count of number and type of student by profession participating in C³ extracurricular activities</td>
<td>Review by C³ extracurricular committee to monitor and suggest methods to recruit students for participation</td>
</tr>
<tr>
<td>Number and types of new C³ extracurricular initiatives developed annually</td>
<td>Count of number and type of C³ extracurricular campus activities on annual basis</td>
<td>Review by C³ extracurricular committee to monitor and suggest new extra-curricular activities</td>
</tr>
<tr>
<td>Student satisfaction with collaborative experiences while participating in C³ extracurricular activities</td>
<td>C³ extracurricular participant surveys to assess satisfaction with extra-curricular activity.</td>
<td>Review by C³ extracurricular committee to recommend changes in extra-curricular activities.</td>
</tr>
<tr>
<td><strong>C³ Teaching Scholars Academy Domain</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completed institutional needs assessment for faculty needs in interprofessional education</td>
<td>Report of MUSC faculty needs in interprofessional education, including perceived institutional barriers and supports</td>
<td>C³ TSA committee review of report to recommend faculty development programs and recommend institutional changes for supporting faculty interprofessional education efforts</td>
</tr>
</tbody>
</table>
Table C (Continued)

<table>
<thead>
<tr>
<th>C³ Teaching Scholars Academy Domain (Continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number and types of</strong></td>
</tr>
<tr>
<td>faculty development programs addressing faculty needs in interprofessional education</td>
</tr>
<tr>
<td>Count of number and type of faculty development programs in interprofessional education on annual basis</td>
</tr>
<tr>
<td>Review by C³ TSA committee to monitor and suggest new faculty development activities</td>
</tr>
<tr>
<td><strong>Number and types of</strong></td>
</tr>
<tr>
<td>faculty teaching in C³ curricular and extracurricular activities</td>
</tr>
<tr>
<td>Count of number and type of faculty teaching in C³ curricular and extracurricular activities</td>
</tr>
<tr>
<td>Review by C³ TSA committee to monitor and suggest methods to recruit faculty for participation in C³ curricular and extracurricular activities</td>
</tr>
<tr>
<td>C³ TSA participant satisfaction with faculty development offerings</td>
</tr>
<tr>
<td>C³ TSA participant surveys assessing satisfaction with faculty development offerings</td>
</tr>
<tr>
<td>Review by C³ TSA committee to recommend changes in faculty development activities</td>
</tr>
<tr>
<td>C³ TSA participant self-assessment with interprofessional education competencies</td>
</tr>
<tr>
<td>C³ TSA participant assessment tool addressing interprofessional education competency</td>
</tr>
<tr>
<td>Review by C³ TSA committee to recommend changes in faculty development activities</td>
</tr>
</tbody>
</table>

C³ Clinical Effectiveness and Patient Safety (CEPS) Domain

| **Number and types of C³ simulated a) learning and b) assessment experiences** |
| Count of number and type of C³ simulated a) learning and b) assessment experiences |
| Review by C³ CEPS committee to monitor and suggest new simulation experiences |
| **Student satisfaction with C³ simulated a) learning and b) assessment experiences** |
| Surveys assessing student satisfaction with C³ simulated a) learning and b) assessment experiences |
| Review by C³ CEPS committee to recommend changes in simulation experiences |
| **Faculty perception of effectiveness of C³ simulated a) learning and b) assessment experiences** |
| Surveys assessing faculty perception of the effectiveness of C³ simulated a) learning and b) assessment experiences |
| Review by C³ CEPS committee to recommend changes in simulation experiences |

Table D. Program Evaluation: Domain Outcomes, Instruments and Use of Information.

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Assessment Instruments</th>
<th>Use of Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C³ Program Review</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alumni perception of their preparation for collaborative interprofessional health care delivery or research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Institutionally developed alumni survey assessing preparation for collaborative interprofessional health care delivery or research</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C³ Implementation and Steering Committee review to recommend changes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table D (Continued)

<table>
<thead>
<tr>
<th>Post-graduate employer/program directors’ assessment of graduates’ collaborative interprofessional health care delivery or research skills</th>
<th>Institutionally developed survey assessing graduates’ collaborative interprofessional health care delivery or research performance in post graduate employment/program</th>
<th>C³ Implementation and Steering Committee review to recommend changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes in student attitudes regarding interprofessional training</td>
<td>Pre and post intervention use of validated scale assessing interprofessional attitudes (i.e., Revised Interprofessional Perception Scale, Attitudes Toward Health Care Teams)</td>
<td>C³ Implementation and Steering Committee review to recommend changes</td>
</tr>
<tr>
<td>Changes in student collaborative interprofessional skills</td>
<td>Pre and post intervention use of institutionally developed items assessing collaborative interprofessional skills in classroom and clinical/research settings</td>
<td>C³ Implementation and Steering Committee review to recommend changes</td>
</tr>
</tbody>
</table>

**Anticipated Timeline**

The anticipated timeline for implementing C³ is proposed and it recognizes some of the major challenges described below. Time will be required for planning and resolution of these challenges. In addition, there are new positions to be established, perhaps requiring national searches to recruit key personnel. All of the existing interprofessional programs cited above will continue to be active. We are also anticipating that the SACS On-Site Review Team will provide valuable suggestions to improve this Plan. Table E is the proposed timeline for implementing various activities associated with this Plan.

Table E. Timeline for Initiating Campus Activities Contributing to QEP Outcomes.

<table>
<thead>
<tr>
<th>Organizational</th>
<th>Academic Year 2007-2008 Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit C³ Director (in process)</td>
<td>Identify Assessment Team members</td>
</tr>
<tr>
<td>Establish C³ Committee</td>
<td>Conduct needs analysis of assessment instruments</td>
</tr>
<tr>
<td>Establish C³ Implementation Committee</td>
<td>If needed, initiate development of program assessment instruments</td>
</tr>
<tr>
<td>Train Implementation Committee members as well as Domain teams</td>
<td>Develop criteria for funding interprofessional initiatives that match goal and content areas</td>
</tr>
</tbody>
</table>
### Table E (Continued)

#### C³ Curricular Domain

<table>
<thead>
<tr>
<th>Task</th>
<th>Responsible Party</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit Domain Team Leader</td>
<td></td>
<td>Identify strategies to enhance implementation of Domain required activities into each academic program</td>
</tr>
<tr>
<td>Establish university-based curriculum committee</td>
<td></td>
<td>Develop and implement learning activity to address Goal 1</td>
</tr>
<tr>
<td>Develop C³ core competencies and complete appropriate approval processes</td>
<td></td>
<td>Develop assessment plans for Goal 1</td>
</tr>
<tr>
<td>Identify topic areas to serve as foci for interprofessional learning for next 2-3 years</td>
<td></td>
<td>Identify barriers to curricular initiatives</td>
</tr>
</tbody>
</table>

#### C³ Extracurricular Domain

<table>
<thead>
<tr>
<th>Task</th>
<th>Responsible Party</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit Domain Team Leader</td>
<td></td>
<td>Identify strategies to enhance interprofessional understanding and collaborative skills in ongoing extracurricular activities</td>
</tr>
<tr>
<td>Establish university-based C³ extracurricular committee</td>
<td></td>
<td>Develop strategies to evaluate the effectiveness of extracurricular components on students’ development of core competencies focusing on Goal 1</td>
</tr>
<tr>
<td>Inventory existing interprofessional extracurricular activities and their contributions to the C³ goals</td>
<td></td>
<td>Implement Interprofessional Education Day activities for year 1 and 2 students</td>
</tr>
<tr>
<td>Select baseline data assessment instruments</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### C³ Teaching Scholars Academy (TSA) Domain

<table>
<thead>
<tr>
<th>Task</th>
<th>Responsible Party</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish a university-level TSA Advisory Board to address creation of the TSA</td>
<td></td>
<td>Conduct a literature review and research from peer institutions to define content area of interprofessional education and related faculty development issues</td>
</tr>
<tr>
<td>Recruit Domain Team Leader who will facilitate TSA work within the C³</td>
<td></td>
<td>Identify interprofessional teams of faculty members for creation of curricula and content materials related to C³ goals</td>
</tr>
<tr>
<td>Identify and promote faculty development opportunities through the Apple Tree Society in interprofessional education</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### C³ Clinical Effectiveness and Patient Safety Domain

<table>
<thead>
<tr>
<th>Task</th>
<th>Responsible Party</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit Domain Team Leader</td>
<td></td>
<td>Completion of MUSC Healthcare Simulation Center</td>
</tr>
<tr>
<td>Establish Clinical Effectiveness and Patient Safety Domain committee</td>
<td></td>
<td>Identify potential interprofessional opportunities</td>
</tr>
</tbody>
</table>

### Academic Year 2008-2009 Activities

#### Organizational

<table>
<thead>
<tr>
<th>Task</th>
<th>Responsible Party</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepare annual report to the Steering Committee and Associate Provost regarding progress of C³ work to date</td>
<td></td>
<td>Evaluate effectiveness of activity to date, including both student acquisition of skills and process outcomes</td>
</tr>
<tr>
<td>Review organizational structure and climate to make recommendations for change as appropriate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table E (Continued)

<table>
<thead>
<tr>
<th>C 3 Curricular Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement at least one required learning activity addressing Goal 1</td>
<td>Development assessment plan for Goal 2</td>
</tr>
<tr>
<td>Assess student acquisition of Goal 1</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
<tr>
<td>Develop plans for implementing one required learning activity that addresses Goal 2</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>C 3 Extracurricular Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Based upon strategies identified, implement pertinent interprofessional activities for students, particularly related to Goal 1</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
<tr>
<td>Assess effectiveness of extracurricular activities in enhancing interprofessional collaboration related to Goal 1</td>
<td>Plan initiatives and assessment instruments for Goal 2</td>
</tr>
<tr>
<td>Explore expanding Interprofessional Day to Interprofessional Week</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C 3 Teaching Scholars Academy (TSA) Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of TSA</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
<tr>
<td>Identify and promote faculty development opportunities through the Apple Tree Society in interprofessional education and TSA</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C 3 Clinical Effectiveness and Patient Safety Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide support for use of Domain resources for interprofessional learning activities and/or assessments</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve</td>
</tr>
</tbody>
</table>

#### Academic Year 2009-2010 Activities

### Organizational

<table>
<thead>
<tr>
<th>Continue implementation of required learning activities that addresses Goal 1</th>
<th>Assess student acquisition of Goal 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue assessment of student acquisition of Goal 1</td>
<td>Develop plans for implementing at least one required learning activity that addresses Goal 3</td>
</tr>
<tr>
<td>Implementing learning activities that addresses Goal 2</td>
<td>Development assessment plans for Goal 3</td>
</tr>
<tr>
<td>Assess student acquisition of Goal 2</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
<tr>
<td>Implement Goal 2 and review Goal 3</td>
<td></td>
</tr>
</tbody>
</table>
Table E (Continued)

<table>
<thead>
<tr>
<th>C3 Extracurricular Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Based upon review of activity, implement new pertinent interprofessional activities for students</td>
<td>Assess effectiveness of extracurricular activities in enhancing interprofessional collaboration</td>
</tr>
<tr>
<td>Continuation implementation of existing interprofessional activities for students</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C3 Teaching Scholars Academy (TSA) Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement multiple faculty development programs to address faculty educational needs in interprofessional education in concert with the Apple Tree Society</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
<tr>
<td>Identify and develop additional faculty development programs</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>C3 Clinical Effectiveness and Patient Safety Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide support for use of Domain resources for at multiple interprofessional learning activities and assessments</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Academic Year 2010-2011 Activities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational</td>
<td>Evaluate effectiveness of activity to date, including both student acquisition of skills and process outcomes</td>
</tr>
<tr>
<td>Prepare annual report to the Steering Committee and Associate Provost regarding progress of C3 work to date</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>C3 Curricular Domain</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Continue implementation of at least one required learning activity that addresses Goal 1</td>
<td>Assess student acquisition of Goal 3</td>
</tr>
<tr>
<td>Continue assessment of student acquisition of Goal 1</td>
<td>Develop plans for implementing required learning activity that addresses Goal 4</td>
</tr>
<tr>
<td>Continue implementation of at least one required learning activity that addresses Goal 2</td>
<td>Development assessment plans for Goal 4</td>
</tr>
<tr>
<td>Continue assessment of student acquisition of Goal 2</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
<tr>
<td>Implement at least one additional and required learning activity that addresses Goal 3</td>
<td></td>
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</tbody>
</table>
### Table E (Continued)

<table>
<thead>
<tr>
<th>C3 C3 Extracurricular Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Based upon review of activity, implement new pertinent interprofessional activities for students</td>
<td>Assess effectiveness of extracurricular activities in enhancing interprofessional collaboration</td>
</tr>
<tr>
<td>Continuation implementation of existing interprofessional activities for students</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
<tr>
<td>Develop plans for implementing at least one required learning activity that addresses Goal 4</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>C3 Teaching Scholars Academy (TSA) Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement multiple faculty development programs to address faculty educational needs in interprofessional education in concert with the Apple Tree Society</td>
<td>Identify and develop additional faculty development programs</td>
</tr>
<tr>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
<td>Develop plans for implementing one required learning activity that addresses Goal 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C3 Clinical Effectiveness and Patient Safety Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide support for use of Domain resources for multiple interprofessional learning activities and assessments</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
<tr>
<td>Develop plans for implementing additional required learning activity that addresses Goal 4</td>
<td></td>
</tr>
</tbody>
</table>

### Academic Year 2011-2012 Activities

#### Organizational

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Prepare annual report to the Steering Committee and Associate Provost regarding progress of C3 work to date</td>
<td>Evaluate effectiveness of activity to date, including both student acquisition of skills and process outcomes</td>
</tr>
</tbody>
</table>

#### C3 Curricular Domain

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Continue implementation of at least one required learning activity that addresses Goal 1</td>
<td>Continue assessment of student acquisition of Goal 1</td>
</tr>
<tr>
<td>Continue implementation of at least one required learning activity that addresses Goal 2</td>
<td>Continue assessment of student acquisition of Goal 2</td>
</tr>
<tr>
<td>Implement at least one required learning activity that addresses Goal 3</td>
<td>Implement one required learning activity that addresses Goal 4</td>
</tr>
<tr>
<td>Assess student acquisition of Goal 4</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
</tbody>
</table>
### Table E (Continued)

<table>
<thead>
<tr>
<th>C³ Extracurricular Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Based upon review of activity, implement new pertinent interprofessional activities for students.</td>
<td>Continuation implementation of existing interprofessional activities for students.</td>
</tr>
<tr>
<td>Assess effectiveness of extracurricular activities in enhancing interprofessional collaboration.</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C³ Teaching Scholars Academy Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement multiple faculty development programs to address faculty educational needs in interprofessional education in concert with the Apple Tree Society.</td>
<td>Identify and develop additional faculty development programs.</td>
</tr>
<tr>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>C³ Clinical Effectiveness and Patient Safety Domain</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide support for use of Domain resources for multiple interprofessional learning activities and assessments</td>
<td>Review effectiveness of Domain activities to date, and propose changes to improve Domain efforts</td>
</tr>
</tbody>
</table>

### Budget for C³

The proposed budget for C³ is summarized below (Table F). The date of this submittal is before MUSC’s annual budget hearings at which time further refinements may be made. The actual budgeted request may also vary recognizing that some of the expenses will be borne by existing programs. As a result, the budget presented below is a combination of continuation of current level of funding on existing programs as well as a request for new funds in FY08 (Fiscal Year of July 2007 through June 2008).

This budget was created with the assistance of the Director of MUSC’s Budget and Analysis Office. She is a member of the QEP Committee (Table D) and will help guide the budget request through the budgeting and planning process. MUSC’s Fiscal Year (FY) begins July 1st and ends June 30th each year. The budget and planning cycle begins in February with hearings in late April and early May. The final budget request is presented to the Board of Trustees in June for their review and approval.

The operating budget for our QEP will be submitted in April and approved through the Office of the Vice President for Academic Affairs and Provost. Table F represents the operating budget for C³ and will be converted to a format consistent with the University’s budget presentation under the following broad categories: personnel; fringe benefits; contractual services; supplies; fixed charges; equipment; and travel. Feedback from On-Site Review Team will help shape the final budget request.

It should be recognized that the funding for this budget will be supported through a variety of revenues, including state appropriations, tuition and fees, clinical revenue, and indirect cost recovery. The level of funding will be based on a combination of existing resources and requests for new funds.

This budget assumes a 5% COLA for personnel and all personnel positions will be 12 month appointments.
### Table F. Anticipated Budget.

<table>
<thead>
<tr>
<th></th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries of Key Personnel(^A) (C(^3) Director and Domain Team Leaders)</td>
<td>222,500</td>
<td>274,875</td>
<td>288,619</td>
<td>252,818</td>
<td>265,458</td>
</tr>
<tr>
<td>Staff (Administrative Assistant and IT-Web Manager)</td>
<td>80,000</td>
<td>84,000</td>
<td>88,200</td>
<td>92,610</td>
<td>97,241</td>
</tr>
<tr>
<td>Consultants (including outside speakers)</td>
<td>30,000</td>
<td>30,000</td>
<td>30,000</td>
<td>30,000</td>
<td>30,000</td>
</tr>
<tr>
<td>Educational Tools (for instruction)</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Professional Development(^B)</td>
<td>13,000</td>
<td>26,000</td>
<td>26,000</td>
<td>13,000</td>
<td>13,000</td>
</tr>
<tr>
<td>Assessment/Evaluations (including services, licenses)</td>
<td>15,000</td>
<td>15,000</td>
<td>15,000</td>
<td>15,000</td>
<td>15,000</td>
</tr>
<tr>
<td>Travel</td>
<td>7,000</td>
<td>7,000</td>
<td>7,000</td>
<td>7,000</td>
<td>7,000</td>
</tr>
<tr>
<td>Presentations (including off-campus activities)</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
<td>25,000</td>
</tr>
<tr>
<td>Supplies(^C) (including printing and presentations)</td>
<td>8,000</td>
<td>8,000</td>
<td>8,000</td>
<td>8,000</td>
<td>8,000</td>
</tr>
<tr>
<td>C(^3) Unique Start-up Expenses(^D) (including phone and equipment)</td>
<td>15,000</td>
<td>5,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>425,500</strong></td>
<td><strong>484,875</strong></td>
<td><strong>497,829</strong></td>
<td><strong>462,428</strong></td>
<td><strong>478,699</strong></td>
</tr>
</tbody>
</table>

Notes:
\(^A\) Percent effort of the C\(^3\) Director will increase in FY09 and FY10.
\(^B\) Doubles in FY09 and FY10 to recognize increased development needs.
\(^C\) Increases for SACS five-year report preparation in FY11 and FY12.
\(^D\) Start-up costs reduce as C\(^3\) expenses shift to normal operating expenses.

---

**Anticipated Challenges**

While the C\(^3\) goals directly address student learning, part of the overall C\(^3\) purpose is concurrently to effect an institutional culture change that fosters and supports interprofessional collaboration both explicitly (in curricular activities, extra-curricular offerings, faculty development programs, and healthcare simulation learning and assessment experiences) and implicitly in the informal curriculum, or larger institutional environment.

Many of the professional values of health care delivery and research are imparted to students through the “hidden” or “informal” curriculum, the broader cultural milieu of health professions education that occurs outside of formal instruction.\(^25\)\(^26\) This “informal curriculum” manifests in part through students’ extra-curricular activities, but is not limited only to institutionally sponsored non-academic programs and events. Rather, the informal curriculum is truly the broad institutional culture, and has been identified as a powerful environment shaping students’ attitudes, values, beliefs and associated behaviors. In replicating the culture of health care practice and research, in many ways this curriculum socializes students to “do what we really do as practitioners, not what we say as teachers you should do.” Professional values are imparted in training environments by faculty, and faculty are viewed as teachers par excellence in the informal curriculum.\(^27\) For the C\(^3\) to be successful, the informal curriculum will need to mirror formal efforts that impart the importance of...
interprofessional collaboration to students. The institutional culture must support students’ development and demonstration of collaborative interprofessional competencies in health care delivery or translational research contexts.

The success of C³ will be challenged by this need to effect organizational change. Nonetheless, key features of the Plan address underlying organizational change elements relevant to interprofessional education efforts.

First, change issues relevant to the individual are addressed. Change at an individual level for students will occur following a conceptual framework and one that addresses the importance of learning along a continuum (e.g., acquiring teamwork skills and preparing oneself as a team member, learning about other health professions and thinking as an interprofessional team member, applying and putting into practice interprofessional collaborative skills in a learning context, and finally demonstrating or acting as an effective interprofessional collaborator). Significantly, learning will utilize a variety of shared learning strategies throughout students’ education at MUSC and will be supported not only by academic classroom instruction, but also the extra-curricular environment of student government and organizations, student programs, community service engagement and extracurricular academic offerings. Healthcare simulation will be used to provide interprofessional learning (and assessment) in a coordinated fashion and will offer the unique opportunity for students to learn together in realistic, high risk healthcare situations.

Change at an individual level is also being addressed for faculty within the C³. As already stated, faculty development is a fundamental component for effective interprofessional education. Faculty development efforts will address fundamental issues surrounding their underlying values, assumptions, and mental models of interprofessional education. Faculty serve a critical role in formally teaching students interprofessional collaboration but also informally modeling interprofessional collaboration during extracurricular experiences and in the informal curriculum.

Second, feedback regarding interprofessional education at both the learner and institutional levels has also been reported as important to successful interprofessional education implementation. The C³ includes a comprehensive evaluation plan that measures student learning outcomes as well as program implementation outcomes. Furthermore, a quality improvement approach is the evaluation framework and provides the C³ Council, Implementation Committee, and others guiding the C³ with data and analyses to determine where programmatic changes are needed to remain focused on C³ goals.

Allocation of resources to support C³ work is another key feature of the Plan that points to success. A defined budget, including personnel, funds for curricular and extracurricular interprofessional education initiatives, support for faculty development efforts and other resources to encourage new institutional work in this area and sustain current and/or future initiatives is included. The intended sustained financial commitment to C³ is important for its success.

Finally, and imperative for organizational transformation, is the public commitment of leadership to the change proposed. The C³ has been developed and endorsed through all levels of MUSC institutional leadership. Senior leadership will continue to participate in the C³ implementation, crucial for continued conveyance to students and faculty that the institution is committed to the educational goal of interprofessional education, and concurrently, an institutional purpose of creating collaborative care.
Appendix A. Brief History of the Medical University

The Medical University of South Carolina has served the citizens of South Carolina since 1824. It has expanded from a small private college for the training of physicians to a state university with a medical center and six colleges for the education of a broad range of health professionals, biomedical scientists and other health related personnel.

College of Medicine

When the Medical College of South Carolina was chartered by the South Carolina legislature on December 20, 1823 it became the tenth medical school in the United States and the first in the Deep South. Founded as a private, proprietary institution by members of the Medical Society of South Carolina, the college’s early faculty bore full financial and curricular responsibility for the institution until 1913 when the state assumed ownership of the school. The Medical College opened in 1824 with a faculty of seven Charleston physicians and thirty students. The first students graduated on April 4, 1825. The institution has served continuously since its founding, except for a four-year cessation during the Civil War, 1861—1865. Following the Civil War, the college was reorganized and continued to operate, at one point with as few as two students. The 1909 Flexner Report noted that there were 34 faculty, all part time, and 213 students whose fees were the only source of financial support for the school. In late 1913 the state legislature was successfully petitioned to transfer ownership of the school to the state. Incorporation of the medical college as a state institution brought public funding and allowed teaching and service roles to expand steadily.

College of Pharmacy

By faculty resolution, resulting in an amendment to the charter in 1881, the Medical College created a Department of Pharmacy that was the first of its kind in the Deep South. The School of Pharmacy was organized in 1881, with students admitted a year later. The program was discontinued after two years, then resumed on a permanent basis in 1894, offering the degree of Graduate in Pharmacy. The program leading to a degree of Bachelor of Science in Pharmacy was begun in 1936. A Doctor of Pharmacy degree program was begun in 1973, and a PhD program in pharmaceutical sciences was initiated in 1982 (the latter administered through the MUSC College of Graduate Studies in collaboration with the University of South Carolina.) The MUSC College of Pharmacy, which has been in continuous service since 1894, matriculated its final class under the current program of study in 2005. It will continue to operate as an individual College under the aegis of the Medical University of South Carolina until graduation of the class of 2009. Simultaneously, with the 2004 approval of the MUSC and USC Boards of Trustees, the College of Pharmacy is integrating with the University of South Carolina to form a joint program through the South Carolina College of Pharmacy (SCCP) beginning with its first matriculated class in August 2006.

College of Nursing

The College of Nursing at the Medical University of South Carolina had its origin in 1882 when the City Council of Charleston approved a request by the City Hospital for $2,000 to establish a "Training School for Nurses." The school was opened in 1883 (first students accepted in 1884) and continued operating at
the City Hospital until it was destroyed by an earthquake in 1886. It was reestablished as "The Charleston Training School" in 1895. A two-year program of instruction was offered, with some lectures given by the Medical College Faculty. In 1904 Roper Hospital took over administration of the program until 1916, when the Board of Commissioners of the Roper Hospital proposed the incorporation of the Training School with the Medical College. In 1919 the Roper Training School for Nurses became the School of Nursing of the Medical College of the State of South Carolina and expanded to a three-year diploma program. In 1966 the School of Nursing began to phase out the three-year program and established a four-year baccalaureate program leading to the B.S. in Nursing. In 1976 the College of Nursing began to offer a Master of Science in Nursing program. The College of Nursing launched a Doctor of Philosophy in Nursing in 2001. The College of Nursing also offers a B.S.N. degree program for registered nurses at a satellite site at Francis Marion University in Florence, SC.

College of Graduate Studies

Graduate instruction in the basic sciences was offered for the first time in 1949 with programs in anatomy, chemistry, pathology, pharmacology, and physiology. A program in microbiology was added the following year. The first Master of Science degree was conferred in 1951; the Doctor of Philosophy degree was awarded for the first time in 1952. A Committee on Graduate Studies managed graduate training programs until 1965 when the School of Graduate Studies was formally organized as the fourth branch of the institution (joining Medicine, Pharmacy and Nursing). Graduate programs in biometry were initiated in 1970, molecular and cellular biology and pathobiology in 1978, pharmaceutical sciences in 1982, environmental sciences in 1994, and neurosciences in 1999.

The College of Graduate Studies began as a Graduate Committee of the School of Medicine in 1949 with Dr. Fredrick W. Kinard as Chairman and the first students admitted in 1950. This program became the School of Graduate Studies in 1965.

College of Dental Medicine

In 1952 the South Carolina Dental Association recommended that a school of dentistry be established as a unit of the Medical College of South Carolina. The state legislature authorized the development of the School of Dental Medicine the following year, but it was not until 1964 that the legislature provided the funds to implement the 1953 authorization. In 1964 John Buhler was appointed dean of the school of dentistry and the school operated in temporary quarters, primarily in Colcock Hall. The school’s new building, the Basic Sciences/College of Dental Medicine building, was ready for occupancy in December 1970. The first students were admitted in 1967, and the first class of twenty-one students received D.M.D. degrees in June 1971.

College of Health Professions

In 1966 the School of Allied Health Sciences, now the College of Health Professions, was formally organized from the Division of Technical Training, a separate branch of the Medical College, to prepare allied health professionals for careers in the growing health care industry. In 1968 the new school awarded its first bachelor of science degrees to one cytotechnology and four medical technology candidates. Established around the fields of medical technology, radiologic technology, cytotechnology, inhalation therapy and a nurse anesthetist program the program expanded to offer over twenty different training options in the paramedical field. In 1984 lower division certificate and associate degree programs were transferred administratively to Trident Technical College (with the College of Health Profession functioning as the primary clinical affiliate). In 1986 the name was changed to the College of Health Related Professions, and in 1993 the name changed again to the College of Health Professions.
MUSC Medical Center

The Medical College of South Carolina was one of the first medical schools in the United States to establish, in 1834, an infirmary specifically for teaching purposes. In the 1840s the college also entered into agreements for clinical training opportunities at the Poorhouse, the Marine Hospital, and the local "dispensary." In 1856, Roper Hospital was opened, and for 100 years Roper was the Medical College's primary teaching hospital.

The Medical College recognized the need for its own facilities to expand clinical teaching opportunities, as well as to serve as a major referral center in South Carolina for diagnosis and treatment of disease. The ten-story Medical University Hospital accepted its first patients in 1955. In 1985 the name of the hospital and its clinics was changed to MUSC Medical Center, reflecting its function in an academic health institution and its wide range of services to the public. This comprehensive facility is now comprised of three separate hospitals (the University Hospital, the Institute of Psychiatry, and the Children's Hospital). The Medical Center includes centers for specialized care (Heart Center, Transplantation Center, Hollings Cancer Center, Digestive Diseases Center, Storm Eye Institute). Numerous outpatient facilities include the Family Medicine Center and affiliated faculty practice ambulatory care centers.

Among the programs which have earned distinguished reputations at the Medical University of South Carolina are: neuroscience, substance abuse, cardiovascular medicine, drug sciences, perinatal medicine, ophthalmology, hearing loss, genetics, rheumatology, and cancer care.

In May 2000 the South Carolina General Assembly created the Medical University Hospital Authority to enhance management flexibility and operational efficiency for the University’s hospitals and clinics. This new legal entity, also referred to as the “MUSC Medical Center”, continues to serve under the same Board of Trustees and President.

The MUSC Medical Center, including its Charleston Memorial Hospital facility, is licensed for 709 beds. During 2005-06 there were over 31,500 inpatient admissions and 730,000 outpatient registrations.

In 2007, the MUSC Medical Center will complete a 156-bed, 641,000 square foot expansion of its medical center. This additional facility will allow the institution to continue providing a growing and aging patient population with the most advanced care available anywhere.

University Status

In 1950 the title of the chief executive officer was changed from dean to president, with separate deans for each of the schools. By the late 1960s, with six fully operational schools of professional education in the health sciences, the Medical College of South Carolina had become an institution of university size and scope. In 1969, the state legislature changed the name to the Medical University of South Carolina. By this act it established MUSC as the state's only free standing academic health sciences center, exclusively providing a full range of professional education, clinical services and biomedical research.

In 1970 the six schools of the University were designated as colleges, each with its separate administration and faculty organization. Each college awards appropriate degrees along standard academic lines connected with its educational activities. All professional education programs, and the MUSC Medical Center, are accredited by the appropriate professional accrediting agency.
South Carolina Area Health Education Consortium

One of the most pressing problems in health care delivery and disease prevention across the nation is in the distribution of health professionals... The Medical University serves as the "home" institution for the South Carolina Area Health Education Consortium (AHEC), a statewide consortium of teaching hospitals and rural health education centers. Since 1972, the South Carolina AHEC has influenced the education, supply, retention, diversity, and geographic distribution of health care professionals statewide, particularly in smaller, underserved communities. The South Carolina AHEC programs include undergraduate and graduate level medical, nursing, allied health, pharmacy and dental education, as well as residencies in family medicine and eight other specialties. Continuing education programs are provided each year to more than twenty thousand health care professionals. Primary care and interprofessional collaboration are emphasized in many AHEC-sponsored educational programs. The South Carolina AHEC coordinates a health careers program that encourages 8th-12th graders, from ethnic groups under represented in the health professions, to pursue careers in health care. The South Carolina AHEC also administers the Rural Physician and the Rural Dentist programs, both of which are designed to recruit and retain doctors and dentists for underserved communities.

The South Carolina AHEC helps build partnerships between the university and communities across the state, as evidenced by more than 200 full time faculty members and hundreds more part time and consulting faculty who teach in South Carolina AHEC programs in virtually every county in South Carolina.

Growth in the Past 40 years

In the 93 years since the Medical University became a state institution, its growth was gradual up to the 1940s and phenomenal since then, particularly in the past 40 years. Student enrollments have jumped from 571 in 1965 to almost 2,500 students in the fall of 2006 (not including post doctoral residents in medicine, dental medicine and pharmacy); the full time faculty has grown from approximately 200 to over 1,000 (including approximately 500 FTE teaching faculty). The library has more than 200,000 bound volumes, approximately 12,600 E-journal, and a vast array of online databases & knowledgebases.

More than $189,000,000 of extramural grant awards were received by MUSC in the 2005-2006 fiscal year.

Expansion in enrollments and programs has been made possible by ambitious programs of physical plant development that have seen the institution grow from one building in 1913 to a 76-acre medical complex, with more 89 buildings. Since 1985, eight new buildings have been constructed: East Wing and Children's Hospital (1986), Institute of Psychiatry (1988), North Tower (1993), Harper Student Center (1993), Hollings Cancer Center (1993), The Strom Thurmond Biomedical Research Center and the Gazes Cardiac Institute (1997) in cooperation with the VA Hospital, Charles P. Darby Children’s Research Institute (2005), and Ashley-Rutledge Parking Garage (2005). In addition there have been major renovation/addition projects including Storm Eye Institute expansion (1998), Rutledge Tower Ambulatory Care Facility renovation (1998), College of Health Professions Complex (2005), Hollings Cancer Center Tower expansion (2005), and Colcock Hall (2005-2006). Scheduled for completion over the next several years are the Phase I Replacement Hospital with 156 beds, the new James B. Edwards College of Dental Medicine Clinical Education Building, and a new Bee Street Parking Garage. A Drug Discovery Building is already in the design phase, and approvals are expected soon for a Bioengineering Building in collaboration with the University of South Carolina and Clemson University.
Appendix B. Suggested QEP Topics Submitted by Colleges

Medical University of South Carolina
QEP Recommendations: Colleges
February 2005

College of Nursing:
1. Interprofessional sharing of teaching resources, technology, course content, clinical placements, and teaching expertise.
   A. Faculty feel if they could be more aware of what is offered in the other disciplines, they could better know how to reach out and collaborate.
   B. Students felt that clinical placements with other students would help in learning respect and professional role.
2. The second most discussed issue was the technology, use of online learning, and a simulation lab.

College of Dental Medicine:
1. Accessibility / acquisition of technology and training in the use of technology in simulation learning in didactic / preclinical / clinical instruction.
2. Quantity and quality of academic infrastructure at MUSC.
3. 'Diversity' in relation to faculty and student recruitment.
4. Faculty recruitment, development and retention.
5. Development of meaningful interdisciplinary courses. Some faculty cited a course in Ethics with case studies as an example of such a course. Interdisciplinary clinical exposure and training was cited as another example.

College of Medicine:
1. Establish, develop, build, oversee, and administer The Medical University of South Carolina - Clinical Simulation Center (MUSC-CSC).
   A. The simulation center must provide:
      a. Opportunities for all MUSC students to learn and practice clinical skills and to be evaluated on their proficiency in performing such skills.
      b. State-of-the-art technology for simulated learning,
      c. Appropriate methods for evaluating the centers' effectiveness, both qualitatively and quantitatively.
   B. When creating the Simulation Center, there must be identified:
      a. A convenient, central location on campus.
      b. Adequate personnel and resources devoted to it.
      c. An administration dedicated to its structure and function.
      d. A strategic plan for continued financial support and development.
   C. Expected benefits from such a CSC should include:
      a. Enhanced student education through increased skills practice.
      b. Enhanced patient safety through better trained clinicians.
      c. Additional opportunities for educational research and evaluation.
d. Additional opportunities for cross-disciplinary experiences including collaboration on research.

e. Additional regional and national opportunities for interinstitutional collaboration.
   - Research Site.
   - Site for Testing and Accreditation.

2. Creation, establishment and maintenance of the Medical University of South Carolina - Academy of Teachers and Scholars (MUSC-ATS).

   A. Identification of a centrally supported structure devoted to the support and perpetuation of highest possible quality teaching faculty in both basic science as well as clinical disciplines. This structure will ensure that:
      a. High quality teaching is financially supported through a greater emphasis on a mission-based approach.
      b. Enhanced faculty development programs are established for helping to improve the quality of the teaching enterprise on campus.
      c. The MUSC-ATS will exist in a superstructure outside of Divisional, Departmental or College boundaries.
      d. Teaching performed by MUSC-ATS members will also cross Divisional, Department and College boundaries.

   B. The MUSC-ATS will require adequate resources and support from the central administration of MUSC. Identified needs include:
      a. A central board comprised of Associate Deans and selected educators from each of the Colleges as well as representation from the Provost Office. Additionally, a chair should be selected and adequate support provided for the administration of the Academy.
      b. The Board should establish standards defining teaching quality and expectations for membership into the Academy.
      c. The Board should also establish protocols and procedures for application, membership into, and removal from, the MUSCATS (consideration of establishment of "Teaching Chairs").
      d. A financial development arm should be established in the initial phase

   C. Expected results from the establishment of the MUSC-ATS include:
      a. Enhanced student satisfaction by improving quality of education.
      b. Enhanced faculty satisfaction by tangible support and acknowledgement of teaching quality and efforts.
      c. Improved academic environment by continued quality improvement of the teaching enterprise through faculty development activities.
      d. Perpetuation of high quality teachers as a renewable resource for MUSC.
      e. Enhanced stature nationally as a Center of Excellence in Teaching and Learning.

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**College of Graduate Studies:**

Members of the graduate faculty of the College of Graduate Studies recommend development and implementation of the following goals to improve student learning at MUSC in the next 10 years. The recommended goals fulfill the following criteria:

- They meet a demonstrable student learning need.
- They have an institution-wide focus.
- They are feasible (i.e., can be accomplished with existing personnel and economic
resources).
  o They require long-term administrative commitment.
  o They include mechanisms for both qualitative and quantitative assessment.

1. Become a national leader in biomedical sciences education.

Objectives
   a. Increase the quality and diversity of each college's applicant pool by at least 15% per year by initiating a development program to provide scholarships for recruitment of outstanding students in each college.
   b. Increase recognition and reward for outstanding student performance.

2. Enhance the quality of education and research by improving curricula, developing more varied research opportunities, and expanding student/faculty facilities.

Objectives
   a. Continue to improve the curricula in the biomedical sciences for graduate and professional students in each college.
   b. Establish a pool of effective instructors in a wide range of biomedical science topics to participate in the education curriculum of each college.
   c. Identify future directions in biomedical research and technology and integrate these into the educational programs.
   d. Seek opportunities for expansion of educational programs, particularly through cooperation with other State universities.

3. Create a premier environment for research and research training opportunities for students.

Objectives
   a. Enhance research strengths by encouraging investigative and recruitment activities of funded investigators that complement and broaden existing university strengths.
   b. Contribute to the identification of potentially new research frontiers and take rapid advantage of changing scientific frontiers.

4. Elevate the national/international stature of the university's faculty in both education and research.

Objectives
   a. Continue to increase the quality and quantity of faculty, with an emphasis on minority faculty, consistent with growth of the university's research base.
   b. Establish and promote faculty reward mechanisms which recognize and promote faculty excellence in education and research training.

5. Develop and expand relationships with other Muse colleges, and other educational institutions, foundations and corporations to foster faculty collaborations and intercollegiate student training programs.

Objectives
   a. Increase collaborative relationships among graduate faculty across all MUSC colleges.
   b. Increase joint research/ training programs and scientific interchange with other colleges and universities within South Carolina.

College of Health Professions: Student Learning Issues

1. Professor screening for new faculty.
   a. Professor orientation/ mentorship.
   b. Emphasis on balance.
c. Communication between faculty - need to understand whole curriculum not just that particular class.

2. Communication - making sure all are on same page.

3. Need Interdisciplinary Studies.
   a. More balanced - Administration/Clinical.
   b. Better understanding of professions.

4. Use Teaching Hospital more effectively.

5. Health care system as a whole - not just hospital based.

6. Need more technology.
   a. PDA’s for clinical.
   b. Laptops – wireless.
   c. Up-to-date software.

7. Teaching and research – Balance
   a. Integrating research/teaching.

8. Use online course - where appropriate.

9. Tutoring service.

10. Need to add at least one interdisciplinary studies class into the curriculum where projects are completed with students from other programs.

11. Need a required residency.

12. Better communication between students and professors.

**College of Health Professions**: Faculty List - December 2004.

1. Writing across curriculum - multiple skills sets needed.

2. Consistency in learning technology.
   a. PDA's.
   b. Laptops.
   c. Software/Hardware.

3. Communication between faculty - understanding the whole curriculum.

4. Interdisciplinary courses.

5. Distance Learning - other options for web based courses.

6. Less face to face time in some cases using web based courses.

7. How to use technology effectively.

8. Advocate better communication techniques.

9. Expectations of programs / interactions between faculty / staff.

10. Cultural barriers - How to overcome these.

11. Better mechanisms for delivering student handout material using technology.

12. Technology
   a. More technology training for faculty
   b. Standardization of technology in classrooms across campus.
   c. Increased access to wireless technology.
   d. Orientation to technology in new CHP building.

13. Characteristics of graduate students and requisite skill set prior to beginning our academic programs - e.g. ability to read independently, well developed study habits.

14. Intensive remediation programs for students who have learning difficulties.

15. Developing a common set of values and strategies for following a model of adult learning.

16. Being and becoming a graduate student - ongoing strategies for students throughout a
17. Increasing students ability to tolerate differences among faculty members teaching styles and expectations.

**General Faculty Suggestions:**

1. Additional resources for faculty development related to (a) best practices in teaching and facilitating learning, (b) the effective integration of technology into teaching and learning, and (c) collaborative learning across disciplines/colleges.
2. Upgrade of computers in the library (hardware, software and networks). In addition to the aging computers, there are not enough of them to meet student demand. Providing the capability for wireless computing in the library would be extremely helpful, as well.
3. Provide financial resources for the library to increase the quantity and quality of information resources for students.

**College of Pharmacy:**

1. Cultural competence.
2. Interprofessional Education.
3. Distance Education.
Appendix C. University Education Advisory Committee Suggested Topics

Report of the ad hoc Institutional Learning Needs Committee Medical University of South Carolina February 2005

Introduction:

The Education Advisory Committee (EAC) of the Medical University of South Carolina (MUSC) functioned as the Institutional Learning Needs Committee to generate a list of topics for consideration for the "Quality Enhancement Plan" (QEP). The EAC is composed of the academic associate deans in each of the six colleges at the university and the director of graduate medical education and is chaired by the Associate Provost for Education and Student Life.

Our charge was to:

1. Establish a mechanism for the identification of topics/issues to be broadly representative of the MUSC academic community,
2. Identify institutional needs necessary to enhance student learning, and
3. List potential projects to satisfy those identified needs

Process:

A subcommittee proposed the process or mechanism for the identification of topics, which was approved by the entire committee and implemented. A description of the process is attached. (For this SACS QEP Report, the stated attachment was added to this Appendix at the end; this constitutes a modification to the original report.)

The ideas from each college and unit were distributed to the committee in advance of our February 2005 meeting. At the February 2005 meeting a list of needs and projects were identified from the collective lists submitted. A draft was circulated for approval to the committee before submission. A list of the initial ideas from each college and unit are attached. (For this SACS QEP Report, the stated attachment was added as Appendix B; this constitutes a modification to the original report).

Final List of Identified Needs and Projects:

Notes: When we refer to students we include students and residents/trainees. The terms interdisciplinary and interprofessional are used interchangeably to refer to bringing learners and faculty from all colleges together, not merely disciplines within a college.

I. Incorporate educational technology to improve student learning.
• Develop a clinical simulation laboratory with identification of core competencies appropriate to clinical simulation instruction.
• Design faculty development activities to prepare for the use of clinical simulation instruction, particularly interdisciplinary approaches.
• Improve online course design through a comprehensive central faculty development program, central information technology decision.
• Develop and fund an academic IT plan to include the integration of wireless technology and new and emerging technologies (PDA’s, etc.), and the planned updating and replacement of hardware and software throughout the university.
• Develop and incentivize model programs that use technology to enhance interdisciplinary learning.

II. Foster a strategic and collaborative approach to faculty development for the improvement of student learning.

• Establish an Academy of Teachers with a focus on developing master teachers with expertise in the design and delivery of Interdisciplinary learning experiences and the incorporation of appropriate technologies to improve learning.
• Develop a University Center for Educational Excellence, Evaluation and Learning that will encompass the Center for Academic Excellence, the Clinical Evaluation Unit, the Clinical Simulation Center, with central support for improving with discipline specific and interprofessional student learning.
• Design and implement faculty development programs across campus annually that prepare faculty in the areas identified as priorities in the MUSC strategic plan.

III. Enhance the cultural competence and improve the diversity of the faculty and student body.

• Establish core competencies for cultural competence.
• Develop interprofessional and university-wide learning experiences to address the core competencies for cultural competence.
• Use the student life and service learning aspects of collegiate life to foster cultural competence and appreciation of diversity.
• Hold each college and academic unit accountable for effective diversity plans.
• Initiate a strategic initiative at the university level to address diversity.
• Identify and implement the vision of the Office of Student Diversity.

IV. Enhance interdisciplinary/interprofessional learning experiences.

• Develop clinical sites for interprofessional education in the clinical setting.
• Establish an Academy of Teachers with a focus on developing master teachers with expertise in the design and delivery of interdisciplinary learning experiences and the
incorporation of appropriate technologies to improve learning.

- Develop a University Center for Educational Excellence, Evaluation and Learning that will encompass the Center for Academic Excellence, the Clinical Evaluation Unit, the Clinical Simulation Center, with central support for improving with discipline specific and interprofessional student learning.

As you note, we have identified projects that serve more than one need, thus there is duplication. The focus is on making available and appropriately using of information technology to enhance learning that is increasingly interprofessional, where appropriate, while developing the skills of our faculty to foster learning in this new environment.

A collective and alternative need was suggested that attempts to collect some of these ideas in one statement, if that seems workable for the selection group.

**Develop an interprofessional academic infrastructure for faculty development and student learning, incorporating the use of advanced technology.**

**Attachment (Added)**

**SACS Institutional Needs Identification Sub-Committee**

(Hall, McGinty, Wong)

**Purpose:** To suggest the process for handling the request for identifying a topic/issue of focus for the ad hoc Institutional Learning Needs Committee for the upcoming SACS Reaffirmation of Accreditation. This ad hoc committee will then submit to the SACS Reaffirmation Oversight Committee a list of topics/issues appropriate for the development of a Quality Enhancement Plan.

**Process:** Drs. Hall, McGinty and Wong met initially electronically and then face-to face to discuss and propose ideas for the process. A consensus was reached.

**Proposed Process:**

1. The ad hoc Institutional Learning Needs Committee should be comprised of the members of the MUSC Educational Advisory Committee (this body)

2. The Associated Dean for Education in each of the Colleges will involve appropriate faculty and students within their College to identify a list of topics/items of educational needs for their respective college. The Associate Provost for Education (or a designee) will be responsible for obtaining the input of the University Faculty interested in Education who have primary appointments in any of the Colleges. The expressed criteria (defined by the SACS Reaffirmation Process) will be used to trim and prioritize lists. The criteria include:

   a. Must meet a demonstrable student learning need
b. Should have an institution-wide focus

c. Should be feasible [i.e., a reasonable expectation that it can be accomplished]

d. Requires adequate personnel and economic resources

e. Must include adequate staffing for evaluation and oversight

f. Requires long-term administrative commitment, and

g. Will include both quantitative and qualitative assessment

3. Once the seven lists (six colleges and the group of University faculty-at-large) have been individually compiled and prioritized, the Educational Advisory Committee (this body) will devote a future meeting for the purpose of discussing and distilling the seven lists into a single short prioritized list of topics/items for consideration. This small list will then be submitted to the SACS Reaffirmation Oversight Committee for their consideration.

**Timeline:** Pending approval of this process from this body, we would propose that the meeting of the ad hoc Institutional Learning Needs Committee take place no later than the February 2005 Meeting of the Educational Advisory Committee. It is noted that the Quality Enhancement Plan deadline for submission is February 2007.
Appendix D. QEP Leadership Groups

SACS Reaffirmation Oversight Committee

Raymond S. Greenberg, MD, PhD  
Chair, Reaffirmation Oversight Committee  
President, Medical University of South Carolina  
Professor of Biostatistics, Bioinformatics and Epidemiology

Katherine H. Chessman, PharmD  
Past Chair, MUSC Faculty Senate  
Associate Professor of SCCP Pharmacy and Clinical Sciences - MUSC Campus

Joseph T. DiPiro, PharmD  
Executive Dean, College of Pharmacy  
Professor of SCCP Pharmacy and Clinical Sciences - MUSC Campus

Perry V. Halushka, MD, PhD  
Dean, College of Graduate Studies  
Professor of Cell and Molecular Pharmacology and Experimental Therapeutics

Thomas B. Higerd, PhD  
SACS Liaison  
Professor of Microbial Physiology  
Associate Provost, Institutional Research and Assessment  
Chair, SACS Steering Committee

Arnold W. Karig, PhD  
Campus Dean, College of Pharmacy  
Professor of SCCP Pharmacy and Clinical Sciences - MUSC Campus

John R. Raymond, MD  
Provost, Vice President for Academic Affairs  
Professor of Nephrology

J. G. Reves, MD  
Vice President for Medical Affairs and Dean, College of Medicine  
Professor of Anesthesia and Perioperative Medicine

John J. Sanders, DDS  
Dean, College of Dental Medicine  
Professor of Stomatology

Gail W. Stuart, PhD  
Dean, College of Nursing  
Professor of Nursing

Becki A. Trickey, PhD  
Interim Dean, College of Health Professions  
Professor of Rehabilitation Sciences

Valerie T. West, EdD  
Associate Provost for Education and Student Life  
Professor of Health Professions

Alexander Whitley  
3rd Year Student, College of Graduate Studies  
Past President, Student Government Association
SACS QEP Committee

Amy V. Blue, PhD
Chair, QEP Committee
Associate Dean for Curriculum and Evaluation - COM
Associate Professor of Family Medicine

Richard J. Albenesius, DMD
Chair, Faculty Senate
Associate Professor of Stomatology - CDM

Laura K. Cousineau, MLS
Assistant Director for Program Development and Resource Integration (Library)
Associate Professor of Library Science and Informatics

Michael T. Drake
3rd Year Student, College of Medicine
President, Student Government Association

Brianne L. Dunn
3rd Year Student, College of Pharmacy
Vice President, Student Government Association

Susie Edwards, CPA
MUSC Director of Budgets and Analysis

David R. Garr, MD
Associate Dean for AHEC
Professor of Family Medicine - COM

Philip D. Hall, PharmD
Associate Dean for Curriculum - COP
Associate Professor of SCCP Pharmacy and Clinical Sciences MUSC Campus

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SACS Liaison
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Associate Provost, Institutional Research and Assessment
Chair, SACS Steering Committee

Tara M. Hulsey, PhD
Associate Dean for Academics CON
Associate Professor of Nursing

Tariq Javed, DMD
Associate Dean for Academic and Student Affairs - CDM
Professor of Stomatology

Carol J. Lancaster, PhD
Assistant Provost for Institutional Research and Assessment
Associate Professor of Biostatistics, Bioinformatics and Epidemiology - COM

Frances Wickham Lee, DBA
Director of Instructional Operations - Clinical Effectiveness and Patient Safety Center
Associate Professor of Health Administration and Policy - CHP

Mary Mauldin, EdD
Director of the Center for Academic Research and Computing
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Jacqueline F. McGinty, PhD
Associate Dean - CGS
Professor of Neuroscience Research

Maralynne D. Mitcham, PhD
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Jeffrey G. Wong, MD
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Special Assistant to the Provost

Robin Hanckel
Administrative Coordinator
Office of Institutional Research and Assessment

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Associate Professor of Biostatistics, Bioinformatics and Epidemiology - COM

Mary Mauldin, EdD
Director of the Center for Academic Research and Computing
Associate Professor of Library Science and Informatics
Appendix E. Interprofessional Day: Brainstorming Session

MEDICAL UNIVERSITY OF SOUTH CAROLINA
Interprofessional Day, January 20, 2006
Brainstorming Session: Grouped Ideas from Top Two

Curriculum Changes
Mixed profession course – required, 1 hr., from each department
Required elective outside of college
Taking classes together
Offer more elective classes that could relate to that field
Correlate different professions and roles into (teaching) coursework or study so it will make it easier for referral
More classes with students from other professions
Incorporated into curriculum
Integrate interprofessional issues into current classes
Work into curriculum – not a one-time deal!
Discuss this curriculum always. Don’t just introduce this information to us in a four-hour conference.
This is an isolated day.
Mandatory lecture series

Simulation/ Labs
Labs together
Simulation lab (everyone working together) – clinical credit
Hypothetical clinical situations (group of students-interdisciplinary) – standardized patients
SIM man class/case studies together

Clinical
Pro-bono clinics
Observe CARES clinic
Care clinic open to all disciplines for elective credit
Observe other professions in clinic
Sit in on team meetings
Clinical experience
Rotations together/observation
A coordinated rotation
Integrated rotation class

Shadowing
Shadowing other professionals
School-wide shadowing experiences
Shadowing different professions
Shadow other professions
Try someone else’s schedule – “Day in the life of one of your peers”
Shadow professions/patients
Shadowing experiences
Shadowing from other professions
Shadowing experiences
Shadow other professions
Clinical shadowing experiences
Shadow people in other professions
Students participate in shadowing in other professions (ex: nursing shadowing pharmacy practice, etc.)
Shadowing
Spend a day with each specialty/discipline (shadow)
Shadowing program – switch roles
Shadowing other experiences
Shadowing people from other professions

**Extracurricular**
More interactions between classes (schools), i.e. socials/lunches during semester
Happy hour
Informal social gatherings
Parties together – all colleges
More involved social interaction at SGA events
Social activities – karaoke events, trivia nights (each team could have one member from different profession), scavenger hunt
forced mixers
SGA – Social situation/party for first years//afternoon orientation/meet and greet/scavenger hunt
One day interprofessional outreach program – targeted to underserved
Student organizations related to cross-hybridization of disciplines
Group from each class represent an interprofessional group
Student Research Day (several locations)

**Suggested Formats:**

**Case Study**
Small group case studies
Small group case studies
Interprofessional case studies
Give small group a scenario and tell group members how you would contribute
During clinical time, get students from different health professions together to go over case studies and discuss how the professionals work together and what needs to be done, and within disciplines, discuss who patients should see next
Case studies together
Problem-solving scenarios (common problem/interaction problem)
Problem-based learning

**Seminar Series**
Seminars – professionals from different areas sharing experiences
Monthly seminars (mix different programs)
Food – lunch seminars – needs to occur more frequently to establish relationships
Seminars
$$ incentive/lunch-n-learn (not on Fridays!)
Free luncheons with break-out groups
Discuss current events and “hot topics”
Testimonials from professionals required at lunchtime instead of video

**Scheduling**
Not on Friday
Overlapping of classes between different programs
More effective if presented/continued in later years (third or fourth)
Interprofessional day later on in program of study
Start earlier
Interprofessional Day at the start of the semester before the semester gets underway – maybe even at orientation – Not on a Friday afternoon!
Hold IP day later when more familiar with disciplines
Friday not a good day, maybe better in second semester of school during orientation
Interprofessional orientation during first semester
Have this program after exposure to other disciplines

**Content**
Know legal responsibilities of each profession
For application, everyone must understand why changes, communication are necessary
More accurate and updated portrayals of med team
See “real interactions”
Movie in small groups – role play – time management

**Critiques of IP Day Approach**
Make video more specific and/or handout to go along with video that describes what each professions duties are
Focus more on how to work and communicate with each other rather than just what the other professionals do
Very contrived
Explain each profession
Instead of a video, a standardized patient
Presentations that show more about the profession
More video/instruction about interdisciplinary team meetings
More realistic video
Already so much to do
Make packets
Appendix F.  Summary of Interprofessional Attitudes Survey Spring 2006.

Survey Instrument: Thirty items modified from a survey designed by Forman, Nyatanga and Dann (School of Education, Health and Sciences, University of Derby, UK, 2004)

Survey Methodology: An online survey was sent to all faculty, students and selected clinical staff in the hospital.

Results: Respondents were faculty (216), clinical staff (73), and students (149). Their responses were scored and compared for differences among these groups. Of the 30 questions in the survey, there were significant differences between groups in 15 questions listed below:

<table>
<thead>
<tr>
<th>Survey Items</th>
<th>Means* for Different Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Faculty-Staff</td>
</tr>
<tr>
<td>3. Interprofessional practice without interprofessional education is bound to fail</td>
<td>Fac 3.87</td>
</tr>
<tr>
<td>6. I believe having students know about the role of other professionals will enable them to work more efficiently upon graduation</td>
<td>Fac 4.57</td>
</tr>
<tr>
<td>7. Clinical practice and improve only by learning with other professionals</td>
<td>Fac 3.57</td>
</tr>
<tr>
<td>11. Interprofessional education takes too much time out of professional specific education</td>
<td>Fac 2.28</td>
</tr>
<tr>
<td>14. There are better ways than interprofessional education to understand other professions</td>
<td>Fac 2.41</td>
</tr>
<tr>
<td>16. The issues relating to interprofessional education are not clear</td>
<td>Fac 3.20</td>
</tr>
<tr>
<td>19. There is a danger for professional identities to be diluted</td>
<td>Fac 2.16</td>
</tr>
<tr>
<td>20. It is necessary for each profession to maintain its own identity</td>
<td></td>
</tr>
<tr>
<td>21. It is important for each professional group to have its own code of conduct</td>
<td>Fac 3.35</td>
</tr>
<tr>
<td>22. Skills relevant to my role can only be learned within my own professional group</td>
<td>Fac 2.38</td>
</tr>
<tr>
<td>23. My professional group makes the most important contribution to care delivery</td>
<td>Fac 2.28</td>
</tr>
<tr>
<td>24. Other professions do not understand the issues that my profession has to confront</td>
<td>Fac 3.30</td>
</tr>
<tr>
<td>25. My profession needs to learn a lot about good practice from other professional groups</td>
<td>Fac 3.44</td>
</tr>
<tr>
<td>26. All professional groups provide an equally important service</td>
<td>Fac 3.75</td>
</tr>
<tr>
<td>30. I do not believe there is a difference in the approaches to care taken by each profession</td>
<td>Fac 2.38</td>
</tr>
</tbody>
</table>

* Scale for responses is 5=Strongly Agree, 4 =Agree, 3=Undecided, 2=Disagree, and 1= Strongly Disagree.
Appendix G. Description of the Teaching Scholars Academy

Background

It is a time of opportunity for educators at MUSC. The Medical University will be undergoing its Southern Association of Colleges and Schools (SACS) Accreditation and with it, the privilege of identifying a Quality Enhancement Program that will have profound implications on the education of all of our Colleges’ students.

With increasing emphasis on research, clinical care activities, and ever-present concerns for financial viability, it is necessary to be mindful of and preserve our commitment to education as we prepare our students to become the next generation of health care professionals. Historically, the educational structure for teaching curricular content within the various colleges, despite their close proximity at MUSC, has tended to be very parochial with the sharing of teaching resources more of the exception than the norm. Colleges are rightfully concerned with discipline-based programs that are dedicated to seeking new knowledge, improving health care, and teaching learners who are directly associated with those disciplines. However, upon closer study, there are clearly opportunities for enhancing the quality of student learning through the sharing of teachers and their skills.

Emphasizing the importance of interprofessional education as a concept is critical for enhancing the learning of our students. In order to engage students in this activity, our faculty members, as a whole, must be actively engaged in the process. This will necessitate a “sea-change” and culture-shift within the entire institution. Our strategy for affecting this change, which is also designed to reaffirm the educational mission of the academic Medical University, enhances the sharing of teaching expertise through the organizational structure of a Teaching Scholars Academy. Such an Academy could help lower the structural barriers presently encountered between the different Colleges, should enhance the learning of all of our Colleges’ students, and would promote teaching and education as a distinguished scholarly pursuit, both within individual Colleges as well as in the University as a whole serving as a resource for the on-going pursuit of academic excellence in health sciences education. To date, over 20 other Medical Schools use Academies to achieve these ends.

As new and innovative educational programs are formulated and implemented, the critical evaluation of these programs will be an essential element of the entire process. The following outline will provide details of establishing the Teaching Scholars Academy and the strategies for evaluating the success of our endeavor.

Overall Goals of the Teaching Scholars Academy

The Goals of the Teaching Scholars Academy are:
1. To advocate for, and support the academic efforts of, teachers of health sciences;
2. To maximize efficiency and effectiveness of curricular teaching through shared teaching faculty across Colleges;
3. To foster, facilitate, and disseminate ongoing professional development for teachers of the health sciences thereby promoting excellence in teaching;
4. To help initiate, develop and implement curricular reforms and innovation teaching/learning techniques to enhance student learning;
5. To develop new assessment tools to determine student comprehension and mastery;
6. To promote academic research and work in the scholarship of effective teaching between Colleges on health science education initiatives;
7. To provide mentorship in the activities of teaching and education for junior teaching faculty;
8. To educate faculty on new statements from national organizations regarding medical teaching and education in general; and,
9. To aid in the recruitment and development of new faculty member with a particular interest in and talent for education.

Activities of the TSA

The TSA will become a driving force for inter-professional educational activities within the MUSC. Its members shall be involved in:

 Developing and delivering faculty development and improvement activities for others in the Academic community, specifically as it relates to Inter-professional education;
 Creating a community of distinguished educators that promotes teaching and learning for health sciences students;
 Mentoring junior faculty and fellows in educational techniques, skills, and activities necessary for academic success;
 Crafting explicit objectives for measuring teaching excellence for the purposes of a faculty member’s teaching portfolio;
 Assisting junior faculty in the creation and maintenance of effective teaching portfolios;
 Fund-raising for the purpose of stabilizing financial support of the Academy and its products and for promoting teaching scholarship and educational research by its members, such as application for educational training grants, support from Foundations who might have an interest in supporting higher education, grants in support of educational research activities, etc.;
 Establishing connections with similarly oriented organizations on campus, including college-specific TSAs, the Apple Tree Society, the Writing Center and the Center for Academic Excellence, to further advance faculty development and improvement activities;
 Promoting an expectation that the scholarship of teaching, and the products created therein, should count equally (in appointment, promotion and tenure decisions) with research and/or clinical productivity for those faculty members in significant teaching roles; and,
 Providing Peer-review support of teaching activities as well as MUSC health sciences education research efforts, in both paper and electronic formats.

As the TSA becomes established, its activities should be expanded to include the sponsorship of educational events and the funding of educational “mini-grants” in support of novel and innovative projects in medical education.

Steps to Create the MUSC TSA

Spearheaded by the Director of the Center for Academic Excellence, the Promoting Communication Among Faculty (PCAF) Initiative is designed to create an organization consisting of a small number of faculty members from each of the colleges who are dedicated to the development and enhancement of teaching effectiveness for their learners. In this primarily faculty development activity, members will be engaged in advancing expertise in:

 Small group learning in classroom settings
 Peer evaluation techniques and instruments
 Methodology for evaluating learners
 Construction of examinations and other evaluation tools
- Curricular design and evaluation
- Test-taking skills for learners
- Creative large group teaching
- Creating academic portfolios

Specifically, for the Quality Enhancement Proposal, this group would be given the task of creating curriculum for Inter-professional education, methodologies for teaching this curriculum, and evaluation strategies for the teaching and learning.
Appendix H. Description of MUSC’s Apple Tree Society

MUSC’s Apple Tree Society was formed in the late 1990’s to promote teaching as scholarly work. The Society seeks to support the development of a scholarship of teaching and learning, as promoted by an initiative of the Carnegie Foundation known as CASTL (Carnegie Academy for the Scholarship of Teaching and Learning).

The Society does not have formal membership, but rather it is open to all faculty. A steering committee, composed of representatives from each of the six colleges and the general faculty, guide the vision and planning for the Society.

The goals of the Society are to:

1. expand the faculty development opportunities related to teaching on campus;
2. initiate programs that recognize and enhance the value of teaching as a scholarly activity;
3. explore and support innovative methods and technologies for teaching and learning; and,
4. promote professional development of current and future educators.

The Society hosts monthly Brown Bag sessions, seminars, and guest speakers. Previous Brown Bag sessions have included topics on peer evaluation, teaching in a simulated environment, active learning techniques, test construction, and the integration of technology into teaching and learning.

Seminars have included panel discussions with recipients of teaching awards, panel discussions with students regarding qualities of effective teachers, demonstrations of active learning techniques, and demonstrations of methods of classroom evaluation.

The Society also supports The Charleston Connections Conference; this conference brings faculty together from the major colleges and universities in the local area to share innovations in teaching and learning.

The Apple Tree Society has two new initiatives:

1. The development of a “clearing house” for faculty development opportunities across the university. Through the Apple Tree’s Web site, faculty will be able to locate faculty development opportunities available to all faculty, regardless of college affiliation.

2. The development of a faculty directory including their teaching interests and areas of expertise. The purpose of this directory is to encourage collaboration among faculty across departments, colleges, and the university.

These new initiatives are receiving financial and personnel support through the Office of the Associate Provost for Education and Student Life, and are scheduled to be in operation by August 2007.
Appendix I.  Description of the Proposed MUSC Healthcare Simulation Center (Draft 1/30/07)

The MUSC Healthcare Simulation Center is one of four healthcare simulation centers in South Carolina that are currently part of the statewide Clinical Effectiveness and Patient Safety Center (CEPSC). As a Health Sciences of South Carolina Center of Economic Excellence, the CEPSC is charged with the development and oversight of simulation centers across the state, with an ultimate goal of improving patient safety and healthcare education for the benefit of all South Carolinians.

The Vision of the CEPSC is to stimulate research to address the potential for advanced instructional technology (particularly healthcare simulation) to (1) improve quality of delivered care, (2) promote patient safety and (3) advance the practice and training efficiency of a critically understaffed workforce. The MUSC Healthcare Simulation Center shares this vision with a focus on the MUSC community. The MUSC center will serve all of the academic programs, both students and faculty, across campus, with a strong focus on developing interprofessional learning opportunities among the programs.

Housed in a central location on campus, the MUSC center will be a multi- and inter-professional facility. Currently 11,000+ square feet of education space is being renovated to house the center and its diverse collection of simulators. The target date for the completion of the renovation is late 2007. However, MUSC simulation center activities are already well underway. In 2006-2007 (year one of operation), simulation equipment—ranging from partial task trainers to human patient simulators—valued at over $300,000 has been purchased specifically for the MUSC center. An MUSC Senior Simulation Specialist and an MUSC Administrative Coordinator were hired in December 2006. Budgets for the first three years of the center’s operation have been approved. These budgets include an additional $500,000 for equipment and additional personnel funds to hire the second simulation specialist, an administrative support person, the information technology support person, and a part time center director and associate director, who will be identified from within the MUSC faculty. In addition, the MUSC center will benefit from the information technology infrastructure currently in development to support both local and statewide educational and research projects.

To date multiple educational activities involving the use of the MUSC simulation center equipment and personnel have been initiated. Of particular note is the multi-disciplinary emergency medical team training currently underway for all relevant hospital personnel. Teams of hospital emergency responders use the SimMan ® human patient simulator to learn about specific roles and achieving more effective communication during an emergency call. This course is being developed as a model, not only for the hospital across the state, but also as an interprofessional training course for teams of MUSC students.
Appendix J. The Organizational Chart of the C³ Program

Associate Provost for Education and Student Life

C³ Council

C³ Assessment Team

C³ Director

C³ Implementation Committee
- C³ Curricular Domain Team Leaders
- C³ Extracurricular Domain Team Leaders
- C³ Teaching Scholars Academy Domain Team Leaders
- C³ Clinical Effectiveness and Patient Safety Domain Team Leaders
VI. REFERENCES


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