A Quality Enhancement Plan
The University of Texas Medical Branch at Galveston
February 2008

Report prepared for the Commission on Colleges of the Southern Association of Colleges and Schools (SACS)
The University of Texas Medical Branch at Galveston

synergy:

A Quality Enhancement Plan

In Preparation for the COC-SACS On-Site Visit of February 26, 27, and 28, 2008

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I. Executive Summary

The University of Texas Medical Branch at Galveston (UTMB) is made up of four schools: Allied Health Sciences, Biomedical Sciences, Medicine, and Nursing, with approximately 2,250 students, over 650 interns, residents and fellows, and 1,116 faculty. UTMB is home to Texas’ oldest continuously operating schools of medicine (founded 1891) and nursing (affiliated with UTMB in 1897). The School of Allied Health Sciences was added in 1968 and the Graduate School of Biomedical Sciences was formally created from existing programs a year later.

The focus of synergy, the UTMB Quality Enhancement Plan (QEP), is interprofessional education. Fittingly, the QEP has been given the title of “synergy,” connoting the fact that the whole is greater than the sum of its parts. We believe that bringing all UTMB students together for selected learning experiences is more beneficial, academically and professionally, than educating students solely within the confines of their chosen disciplines.

At UTMB, interprofessional education will be offered in the classroom and online, and through clinical, community-based, service-learning, and other educational experiences in which learners and teachers are drawn across disciplines. These experiences will assist students in developing knowledge and mutual understanding of disciplinary roles through exposure, observation, and dialogue. Experiences with interprofessional teams in clinical and community settings will allow students to participate as a team member, honing their own disciplinary skills while collaborating with members of other health care disciplines in the planning and provision of patient care.

For almost two years, the UTMB Quality Enhancement Plan has evolved through a recursive process of inquiry, research, communication, and negotiation involving broad representation across the institution. Faculty development around synergy is both critically important and also supremely challenging. synergy cannot simply try to teach students more effectively about what is now happening in UTMB’s clinical world. synergy must also seek to change that clinical reality. Faculty must be helped to develop new teaching skills, but also new clinical and personnel-management skills and indeed new styles of thinking about their professional lives.

Interprofessional education is expected to become an educational way of life at UTMB. We look forward to learning a great deal as we set forth on this journey. Building and expanding our existing interprofessional ventures and creating new ones require an organizational structure that can be modified in concert with progress of interprofessional education.

While the creation of synergy began because of a SACS COC requirement, we have found the experience to be positive and rewarding. New vistas opened for us as we came to know and work with previously unknown UTMB colleagues and students. Similarly, as we enumerated established UTMB interprofessional activities it was gratifying to realize how much UTMB had already accomplished. This realization gave us new energy to move forward with synergy. Now as we are paused to make synergy a reality, we do so with enthusiasm and a readiness to successfully address challenges, overcome barriers, and problem solve with alacrity.
II. The University of Texas Medical Branch (UTMB), the setting for synergy

Overview
The University of Texas Medical Branch at Galveston (UTMB) is made up of four schools: Allied Health Sciences, Biomedical Sciences, Medicine, and Nursing. UTMB has approximately 2,255 students, 662 interns, residents and fellows, and 1,116 faculty.

With more than 12,000 employees, the university is the seventh largest employer in the Houston / Galveston area and has a $1.9 billion budget, 21 percent of which comes from the State of Texas.

Education
UTMB is home to the oldest continuously operating schools of medicine (founded 1891) and nursing (affiliated with UTMB in 1897) in the state. UTMB has awarded almost 30,000 degrees since its inception. The School of Allied Health Sciences is the oldest such school in both the South and the Southwest.

Diversity
According to a 2005 survey from Black Issues in Higher Education, UTMB is the country's top granting institution of medical degrees for Hispanic Americans. Overall the university ranked tenth nationally in the number of medical degrees awarded to minorities, including Hispanic American, African American, and American Indian students.

Patient Care
With six hospitals, representing one of two state-owned multicategorical hospital systems in Texas and comprising almost 800 beds, UTMB has one of the largest healthcare complexes in the state. The university's clinical infrastructure also includes more than 100 campus and community-based clinics throughout East and Southeast Texas. UTMB is the principal provider of healthcare for Texas prisoners. The Texas Department of Criminal Justice Hospital (TDCJ) Hospital, located on the UTMB campus, is unique in its acute care services to a prison population. The UTMB Level I Trauma Center serves as the lead trauma care resource for a nine-county region.

Nearly 45,000 inpatient visits and more than 770,000 outpatient visits occur annually. Each year UTMB provides care for residents from 226 of Texas’ 254 counties. On average, UTMB spends close to $190 million annually to care for medically indigent patients.

UTMB is among four percent of some 6,000 hospitals nationwide to have earned Magnet Recognition from the American Nurses Credentialing Center (ANCC).

According to the Telemedicine Information Exchange, which provides a guide to telemedicine programs worldwide, UTMB’s telemedicine program is the world’s largest. Since 1994, UTMB has provided more than 300,000 telehealth consultations in 26 medical and surgical specialties—more than four times the world’s second largest program. In 2007, telemedicine technologies enabled the university to provide distant consults to over 61,000 patients.
Research

UTMB carries out more than 1,800 research projects supported by over $155 million in annual sponsored research support. Six School of Medicine departments rank among the top 20 nationally in NIH funding: Obstetrics and Gynecology (3rd), Pathology (6th), Anesthesiology (10th), Neuroscience and Cell Biology (13th), Surgery (15th), and Otolaryngology (18th).

The university houses two institutes for advanced study: the Institute for Human Infections and Immunity and the Institute for the Medical Humanities. It is home to World Health Organization Collaborating Centers in tropical diseases, international health, and aging and health.

The university’s Claude Pepper Older Americans Independence Center, one of 10 in the United States, conducts research on a number of topics of interest to the elderly, with a particular emphasis on muscle mass and frailty.

UTMB is one of the world’s leading venues for the study of infectious disease. The university is home to the first full-sized maximum-containment laboratory at a U.S. university, enabling us to safely study some of the world’s deadliest pathogens. With the anticipated completion of the Galveston National Laboratory in 2008, UTMB will house one of two landmark and unprecedented national biocontainment laboratories, facilities designed to develop countermeasures against the threat of biological attack and craft new solutions to the growing threat of infectious disease.
III. Introduction to synergy: A Quality Enhancement Plan

The focus of synergy, the UTMB Quality Enhancement Plan (QEP), is interprofessional education. Fittingly, the QEP has been given the title of “synergy,” connoting the fact that the whole is greater than the sum of its parts. Bringing all UTMB students together for selected learning experiences is more beneficial, academically and professionally, than educating students solely within the confines of their chosen disciplines.

Building on the Institute of Medicine (IOM) vision for improving the quality of health services through patient-centered care delivered by interdisciplinary teams, UTMB has engaged in an evolutionary process focused on interprofessional education to improve patient outcomes and foster wellness (Institute of Medicine, 2003). Embracing the concept of interprofessional education begins with a foundation of shared values, goals, language, and competencies. The common goal of patient-centered care is evident in many interdisciplinary teams currently in place in UTMB hospitals and clinics. As students who participate in these experiences are exposed to team members from disciplines other than their own, they develop an understanding of other disciplinary roles and begin to internalize the values of the team and experience first-hand an enhancement in patient outcomes.

We will purposely bring meaningful learning experiences forward from our clinical, classroom, and community exemplars and place them at the forefront of the UTMB academic journey for students. Our focus on education comprised of teams across disciplines will begin early in the educational process, allowing students to develop the cognitive and interpersonal skills that will facilitate innovation and leadership in complex health care, community, or health policy environments later in their educational experience.

At UTMB, interprofessional education will be offered in the classroom and online, and through clinical, community-based, service-learning, and other educational experiences in which learners and teachers are drawn across disciplines. These experiences assist students in developing knowledge and mutual understanding of disciplinary roles through exposure, observation, experience, and dialogue. As students progress in their professional training, experiences with interprofessional teams in clinical and community settings will allow them to participate as a team member, honing their own disciplinary skills while collaborating with members of other health care disciplines in the planning and provision of patient care.

As students are exposed to the evolutionary process of health care, a core set of skills and values of interprofessional teams will emerge, together with the realization of the fluid nature of roles among team members that are required to meet patient needs across cultures and across the continuum of care. Student participation in interprofessional teams will facilitate the development of joint accountability for decision-making and patient outcomes. Opportunities for student leadership across disciplines will evolve as exposure and experience with interprofessional teams evolves. Selected UTMB student teams will also have an opportunity to develop innovative strategies or projects to address pressing or complex health care, policy, or community needs.
IV. Development of the Quality Enhancement Plan

Over the past twenty-one months, the UTMB Quality Enhancement Plan has evolved through a recursive process of inquiry, research, communication, and negotiation involving broad representation across the institution.

A QEP study group was assembled that included faculty and student representatives from each of the schools. The process started with brainstorming sessions that elicited important topics from key stakeholders in the educational community. Discussions started with an explanation of the QEP and its importance to re-affirmation of accreditation and to the institution. Each group was encouraged to focus on the QEP process as an opportunity for educational innovation. Groups were asked to suggest how we could enhance student learning to complement the institution’s ongoing integrated institution-wide planning and evaluation process. Enthusiasm built as faculty and students learned that institutional resources would be specifically dedicated to OUR educational innovation based on shared interests and aspirations. Groups offered insights into areas of relative strength and suggested initiatives aimed at enhancing educationally relevant topics.

Once the topic was selected (see Section V below), a QEP Development Committee was established to propose goals and create innovative initiatives to achieve those goals by building on existing strengths. The development committee was made up of some of the original committee members but others were added to achieve appropriate representation.

The Development Committee pursued several approaches to learn about interprofessional practice and education as they exist presently at UTMB as well as throughout the United States and globally. The committee explored best practices, how interprofessional education (IPE) is implemented, key challenges to its success, and effective solutions. Time and effort were spent on distinguishing between interprofessional, multidisciplinary, and transdisciplinary practice and educational approaches both in their definitions and their applications in actual programs. Representatives from each of the schools attended an IPE conference to learn more about best practices and network and learn from others who had implemented IPE in their institutions.

Over several months, the committee worked to identify, develop, revise, and refine specific goals with measurable objectives. The goals were fashioned so that each builds on the last. Each student would have the opportunity to pursue any and all of the objectives, but not all students would be expected to achieve all goals.

Subcommittees were then established for activity design. Groups of faculty members developed formal, detailed plans with discreet proposed activities, the goals they would achieve, how outcomes could be measured, and budget implications.

As plan preparation continued, faculty members with knowledge and experience in IPE and institutional leaders participated in refining the approach based on realities of institutional culture, resources, and academic aspirations. At each step, the proposed plan was reviewed, revised, and polished based on input from a broad representation of faculty. Faculty input was sought via a number of strategies including presentations and discussions in a range of meetings.
V. Quality Enhancement Plan Topic Selection Process

The QEP Study Group, consisting of faculty from all four UTMB schools, began work in the spring of 2006. The group outlined the process shown in Figure 1 for the selection of a topic for the QEP and completed this process in November 2006.

In the QEP Concept Generation phase of project development, topic suggestions were solicited from a broad spectrum of stakeholders at UTMB, including course and program directors and students from all four schools. The QEP Study Group learned about what educational leaders consider priorities for enhancing student learning at UTMB. Some of the ideas built on existing exemplary programs and resources. Others were proposed to address a perceived need.

Student representatives from all four schools participated in the idea-generation process. They discussed gaps between clinical training and practice, such as limited exposure to some important laboratory procedures in preceptor learning experiences in the SAHS Clinical Laboratory Sciences Program. Students from the School of Nursing noted that in some
instances simulated clinical experiences were not consistent with actual clinical practice procedures. Other students stated that limitations in the availability of equipment and training opportunities contributed to gaps in clinical training and practice. Students further stated that they had sought ways to interact with other members of health care teams, citing examples of programs that they perceived to be partly successful in offering this opportunity. They requested additional opportunities for service learning, particularly service in the community. They also emphasized the importance of being able to earn course credit for learning activities. Students commented that Standardized Patients and the Objective Standardized Clinical Examinations offer a tremendous tool for clinical skills acquisition and assessment.

Faculty with either course director or course coordinator responsibilities called for synergizing across schools for resources and the sharing of ideas. For faculty, issues such as patient safety, teamwork, professionalism, translational research, information literacy, critical thinking, and life-long learning emerged as priorities. Faculty members expressed the viewpoint that early interprofessional engagement would be most effective, particularly around common diagnostic entities.

Faculty members considered potentially useful learning activities. These included a “Brain Bowl” problem-based learning case, and student “rotations” or “shadowing” researchers in the numerous Centers of Excellence as part of courses involving research, or offering a clinically based team learning course that features role clarification and learning. They discussed using available technology such as web classes, telecommunication, or simulation to revolutionize education and proposed the creation of an Honors program that would take the “best” students and mentor them in interprofessional clusters.

Each of the QEP related focus groups proposed ways to track products of interprofessional educational activities. UTMB student portfolios reflecting shared core values and measures with school-specific objectives were described.

Each focus group acknowledged the need for faculty development to learn how to role model, teach, and evaluate interprofessional learning processes. Faculty groups emphasized that any plan must be backed by faculty incentives for participating.

These ideas were funneled to the corresponding curriculum oversight groups and to the QEP Study Group for further discussion and refinement. The QEP Study Group combined similar themes and identified six topics for consideration. These topics were discussed at a combined meeting of the Council of Deans, SACS Leadership Committee, and QEP Study Group on October 25, 2006. Three potential topics emerged from this meeting:

- Evidence-based practice / critical literature analysis
- Team-oriented cultural competence
- Clinical and community-based interdisciplinary teamwork.
A weblog (‘blog’) was established as an opportunity for final feedback from faculty and students. Emails were sent on two different dates to all UTMB faculty and students soliciting comments. In addition, the Faculty Senate discussed the three topics. The feedback was reviewed by the QEP Study Group, which voted unanimously to endorse the third topic above, based on widespread and strong interest among schools, faculty, and students. The topic was endorsed by the Council of Deans. The specific aim of the project is worded as follows:

We will develop and enhance interprofessional educational experiences in the hospitals, clinics, classrooms, and community to promote mutual understanding of disciplinary roles, collaboration in planning patient care, joint accountability for decision making and outcomes, and the benefits to the patient and the community of interprofessional collaboration.

Students will develop skills and gain experiences working collaboratively across cultures with patients, patients’ families, other healthcare professionals, and community-based providers to enhance patient care and wellness.

At a town hall meeting, the UTMB community at large was presented with the concept and requirements of the QEP in general, followed by a question and answer session regarding our selected topic.

Enthusiasm for this particular topic reflects the institutional culture at UTMB. Interprofessional education has garnered a great deal of attention throughout the four schools. Some twenty-seven groups have developed innovative and effective learning opportunities for students in a variety of settings. Clinics, classrooms, and the simulation laboratories offer a number of opportunities for interprofessional learning. In the hospital, students participate in the interprofessional approach to the care of burned children. They learn system-based practice in the geriatric care unit and on the children’s chronic care ward. Interprofessional care and education are even taken to the community in the forms of asthma camp, a woman’s health outreach initiative, an indigent care clinic, and an emergency preparedness program developed to address the hurricane threats. The interprofessional team works because all disciplines understand the unique needs of the populations they serve. Not only is this strategy modeled for the students, but students are educated to approach patient care in this effective fashion. The trainees learn two things apart from specific medical content: they learn how interprofessional decisions are made and they learn how treatment plans are negotiated and uncertainty is resolved in a professional setting.

Students state that this approach provides opportunities for them to contribute their knowledge, skills sets, and experiences to support and enhance the attributes of each discipline in the care of patients. They report that they have learned about various community resources available to their patients, how they operated, and how various health professionals interact with physicians and with each other. Participating on different teams gives students a better understanding of what types of patients they might consider referring in the future and how those patients might benefit from the referral.
VI. The Current Status of Interprofessional Education and Practice at UTMB

In the process of selecting interprofessional education as the focus of the UTMB Quality Enhancement Plan, we inventoried our present commitment to this important academic venture. In this section we present brief descriptions of the ways we currently foster the notion of interprofessional education in the UTMB academic environment.

These initiatives not only create logical foci for interprofessional educational activities, but also provide evidence of a UTMB culture of respect and collaboration that is essential for interprofessional initiatives to be successful.

**QUEST: a 20 Year Tradition** – UTMB students begin the educational process by attending a joint activity for students in all schools. QUEST is an annual welcome for new students sponsored by the Office of the President. It is not an orientation program but a unique tradition that inducts all students quickly into the UTMB world of friends, colleagues and faculty. QUEST is hosted by students from the four schools; and is coordinated by the Office of Student Life in conjunction with the QUEST Student Planning Committee. While QUEST is not a formal interprofessional education activity, it promotes a culture of mutual understanding among students pursuing various health professions education degrees.

**UTMB Honor Pledge** – In the summer of 2002 a committee was established to develop an honor pledge for all UTMB students. Student and faculty representatives from all four schools served on the committee. Today the committee continues to meet to address and promote interprofessional academic integrity issues, respond to student concerns, and sponsor the annual UTMB Academic Integrity Week. The committee developed Interprofessional Classroom Etiquette guidelines and introduces new students to the guidelines at orientation. At the annual campus-wide orientation, all students and faculty together stand and repeat the pledge of honor. The expectations made explicit in the Honor Pledge are part of the professional academic evaluation of students and serve as a capstone to the UTMB Conduct and Discipline Policy in all four UTMB Schools.

**Interprofessional Diversity** – UTMB is proud of the diversity across the institution, particularly in the student population. The emphasis on the value of diversity promotes a culture of respect which facilitates interprofessional collaboration. As shown below in Table 1 and Figure 2, the importance of diversity is made explicit in the university’s Core Values.
Table 1

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Figure 2

Core Values

Professionalism – UTMB emphasizes professionalism on an institutional level across the four schools and in conjunction with clinical and research activities. Students are taught about professionalism as it relates to their selected health care professions as well as its impact on communication and collaboration.

The Professionalism Charter – A Professionalism Charter has been developed by students and faculty. The charter is distributed to all who become a part of UTMB and emphasizes that everyone at UTMB is a member of a community of professionals dedicated to advancing UTMB’s missions of education, research, and patient care. Members of the UTMB community, though diverse in culture, educational backgrounds, and beliefs, share a common set of professional values that help them remain true to UTMB’s historic commitment to the health of Texas. These values, or professional commitments, are outlined in this charter.
Professionalism is the UTMB standard of conduct. The foundation for UTMB’s culture of professionalism is rooted in the trust placed in those who deliver patient care, conduct research, educate future health care professionals, provide administrative support, maintain a supportive environment, and work to master a health discipline.

**Figure 3**

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<th>The following professional commitments apply to each member of the UTMB community.</th>
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<tr>
<td><strong>Commitment to professional responsibilities.</strong> Every member of the UTMB community is considered a professional. We respect one another, work collaboratively and carry out our duties at the highest level of quality. We evaluate our contributions to UTMB’s mission and performance, and we demonstrate continued competence and growth. We support the remediation of problems and discipline of those who fail to act professionally.</td>
</tr>
<tr>
<td><strong>Commitment to service.</strong> Every member of the UTMB community puts the interests of those being served before self-interest. Integrity, compassion and respect characterize this commitment to service.</td>
</tr>
<tr>
<td><strong>Commitment to diversity.</strong> Every member of the UTMB community respects differences, honors choices, and works to eliminate discrimination and health disparities. At the most basic level, everyone addresses discrimination when he or she sees or experiences it.</td>
</tr>
<tr>
<td><strong>Commitment to professional competence.</strong> Every member of the UTMB community is committed to lifelong learning and is responsible for maintaining the knowledge, skills and attitudes necessary for high-quality performance.</td>
</tr>
<tr>
<td><strong>Commitment to confidentiality.</strong> Every member of the UTMB community safeguards the privacy of personal and sensitive information about patients, families, co-workers, research subjects, students and the institution.</td>
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<tr>
<td><strong>Commitment to honesty.</strong> Every member of the UTMB community values honesty. We are truthful, trustworthy and accountable. We do not cheat, steal, lie or destroy or falsify information. Honesty and accountability also prevail when errors and injuries occur. We promptly admit our mistakes and take corrective actions.</td>
</tr>
<tr>
<td><strong>Commitment to the responsible use of resources.</strong> Every member of the UTMB community is a good steward of the resources entrusted to the university. This commitment includes the responsible use of money, equipment, time, space and personnel.</td>
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<tr>
<td><strong>Commitment to improving access to education and health care.</strong> Every member of the UTMB community supports our mission to reduce barriers and promote access to health care services and health sciences education.</td>
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</table>
Commitment to quality. Every member of the UTMB community is committed to excellence by providing the best quality of patient care, education, research and administrative support possible. This commitment is met by continuously striving to achieve higher levels of performance. Everyone, individually and through professional organizations, develops and improves measures of quality that promote achievement of optimal outcomes.

Commitment to maintaining appropriate relations. Every member of the UTMB community avoids using a position of power to unfair advantage, given the inherent vulnerability of individuals who enter into educational, research, employment and therapeutic relationships. Exploitation of any kind is unacceptable, whether for personal or professional gain.

Commitment to managing conflicts of interest. Every member of the UTMB community recognizes, discloses and addresses issues—whether real or perceived—that compromise institutional loyalty and personal integrity.

Commitment to knowledge. Every member of the UTMB community promotes ethical conduct in the creation and use of new knowledge that advances health. We are committed to the honest dissemination of our work and the appropriate application of our knowledge.


Patient Safety Programs – UTMB has made a sizable commitment to patient safety and students are currently exposed to many patient safety initiatives. For example, UTMB began working with LifeWings, LLP, to put new systems into place focusing on patient safety and error reduction in the operating room by using an enhanced “time-out briefing” system. This enhanced system provides an extra step to make sure the operation being conducted is correct, with the correct equipment and medication, for the correct patient, and at the correct site on the person’s body. The program is helping UTMB improve patient safety, increase efficiency, and enhance team effectiveness. All members of the operating room team are encouraged to think like a team, to give continuous feedback, and to focus on solving problems without placing blame. The LifeWings program has now spread to other areas of the UTMB hospitals with many physicians and nurses receiving this training.

Patient / Family-centered Care Initiative – A Women, Infants, and Children Family Centered Care initiative began three years ago. The group initially focused on educating the interprofessional team members on creating a family-centered environment in the hospitals and clinics. The group has been instrumental in establishing a Family Resource Room in the Children’s Hospital, incorporating Family Centered Care content into new nurse orientation, hosting pediatric bereavement workshops, and revising the Neonatal Intensive Care Unit visiting policies to embrace a welcoming approach. The Family Centered Care task force is an interprofessional group.
Use of Technology – the Electronic Medical Record (EMR) – UTMB is in the final stages of implementing an electronic medical record throughout the clinical enterprise. The EMR is recognized as a highly important part of the education experience for all UTMB students. In its present stage of implementation the EMR has provided significant clinical learning in teaching students how to access data, mine data, and effectively utilize tools for research.

Academy of Master Teachers (AMT) – The Academy of Master Teachers is a newly established program at UTMB created to advance the educational mission of the university by raising the standards and improving the quality of faculty teaching efforts across schools. The academy's goal is to improve student learning by developing faculty teaching skills, setting standards for teaching excellence and educational scholarship, promoting educational innovation, and providing academy faculty with resources to further their education career development. The academy will provide evidence of educational accomplishment relevant to promotion and tenure decisions. Faculty from all four schools are invited to apply for membership to the academy by submitting a teaching portfolio which undergoes a rigorous peer review selection process. Members work within interprofessional teams to serve a variety of functions throughout the institution. Academy teams include the following:

- Faculty Development: In charge of workshops, seminars, and conferences, including an annual Fall “Faculty Development Day,” a Spring “Educational Symposium,” and several educational grand rounds.
- Standards and Selection: In charge of establishing standards for defining teaching excellence and educational scholarship.
- Peer Consultation and Mentoring: In charge of assisting junior faculty through mentoring and evaluation and feedback of their teaching efforts.
- Grants and awards: In charge of helping to promote educational innovation by providing a variety of different types of grants including those for projects and training.
- Advocacy: Will advocate for the teaching mission and promote public recognition of educational accomplishments and innovations.

The Academy encourages program participation from schools in the surrounding areas (Baylor College of Medicine, University of Texas Health Science Center at Houston, University of Houston - Clear Lake, Rice) and offers continuing education credits. The link for the Academy of Master Teachers is www.utmb.edu/AMT.

Institutional Educational Effectiveness Committee – As an institution wide initiative, the primary purpose of the Institutional Educational Effectiveness Committee (IEEC) is to conduct, in collaboration with the Office of Institutional Effectiveness (OIE), academic program reviews for all UTMB degree granting education programs. The IEEC, in conjunction with various academic programs, develops student learning objectives, establishes attainment criteria, reviews measurement methods, and develops recommendations on program improvement. The IEEC also develops a schedule of assessment that includes annual program assessment as well as longer term expanded program reviews. The IEEC serves as a repository of program review information that assists the various academic programs with program-specific, external accreditation efforts.

The UTMB Student Government Association – UTMB student government represents an important well-established interprofessional organization contributing to advancement of all UTMB students. The purpose of the Student Government Association (SGA) is to represent and to unite all students at UTMB provide for and enhance communications between the students of the four schools, the faculty and administration of UTMB, as well as sister...
institutions throughout the State of Texas, nationally, and internationally. The SGA endeavors to further communication and relationships among UTMB students. SGA also assists UTMB leadership with regard to policy decisions that concern the members of the student body. SGA promotes the broadening of intellectual, cultural, and recreational opportunities and capabilities of the student body.

**Office of Institutional Effectiveness** – The Office of Institutional Effectiveness (OIE) is a campus-wide resource for academic program assessment and accreditation. The office provides guidance in the development, measurement, and analysis of student learning outcomes and is the central repository of program assessment information. The office provides analytical support for academic departments undergoing discipline specific accreditation and external program reviews and supports the process of assessment for administrative and student support units, including the development of metrics, their measurement, the application of survey methods and data analysis. Working in conjunction with the Institutional Education Effectiveness Committee, OIE will provide support for the development and implementation of assessment for the Quality Enhancement Plan. Finally, OIE is charged with compiling, verifying and submitting university reports to external oversight agencies including the University of Texas System, the State of Texas, and the federal government.

**Office of Educational Development** – The Office of Educational Development (OED) is housed within the School of Medicine and opens its faculty development activities to the faculty of all four UTMB schools. Past offerings include workshops on teaching skills and strategies, evaluating educational projects, and learner-assessment strategies. OED offers a 20-month Scholars in Education program to develop faculty for educational leadership and scholarship. In addition to its faculty development mission, OED also provides expertise for curriculum development and evaluation projects in the School of Medicine. The Standardized Patient Program, an OED unit, provides the medical school and several other UTMB health-professions education programs with high quality, high fidelity assessments of learners’ clinical skills. Active collaboration with faculty in educational research projects rounds out the educational services provided by OED. OED faculty and staff will collaborate with UTMB faculty in the design and evaluation of QEP activities. They will also support UTMB faculty in scholarly examination of the QEP work and the dissemination of that scholarship within the community of educators interested in interprofessional education.

**synergy Development Committee** – A committee with membership expanded beyond the original study group to include faculty with experience in interprofessional teamwork, has worked to identify synergy goals, specific and measurable learning objectives, student learning outcomes that will be used to assess the effectiveness of the synergy implementation, interprofessional experiences currently in operation on campus and in the community, additional experiences that need to be developed so that students can achieve the synergy goals and objectives, faculty development needs, fiscal resources needed for synergy, and organizational structure required for successful synergy implementation.

**Summary of the University of Texas Medical Branch at Galveston Interprofessional Education Status**

While many truly innovative and effective programs exist, opportunities for enhancement are ever present. Some teams’ descriptions suggest a multidisciplinary approach rather than truly interprofessional. UTMB has the opportunity to move to a more deliberately collaborative and communicative model. We also have the chance to help students recognize the unique
nature of our setting and our collegial environment. In that context, we can make role-modeling and learning more effective. We would like to adopt an iterative approach to involve more and more of our students. We also believe we can make a meaningful contribution to health care education by disseminating our activities and their effects to audiences within the UTMB community and outside. Establishing better outcome measures specifically focused on student learning will help us maximize the impact of our existing programs and inform development of new activities and programs as indicated.
VII. A Conceptual Framework for synergy

Figure 4

An approach to Interprofessional Education for all UTMB students

Conceptual Framework
The framework shown in Figure 4 serves to guide and illustrate how synergy will impact student learning outcomes. The framework represents a logical process of creating opportunities, managing resources, and offering activities and experiences within specific situations, all with the intent of promoting learning outcomes that will impact students in the future. This guiding framework is specifically designed to show how interprofessional education will directly benefit students. synergy is represented as a context-specific process so that all members of the community, whether as students, administrators, staff, educators, researchers, or providers of health care, realize how they contribute to interprofessional education. In this way synergy is consistent with the UTMB vision of becoming a truly integrated academic health center.

The synergy framework is adapted from an enhanced logic model developed by the National Institute for Rehabilitation Research (NIDRR). NIDRR employs logic models to evaluate outputs and impacts of its funded initiatives. A logic model is a helpful tool for outcomes planning and performance management that depicts the “chain of events” linking outcome
goals to outputs, activities and inputs. The intent of constructing a logic model is to set standards for rigor and to ensure that results are easily understood and meaningful to stakeholders. Since synergy is committed to maintaining high standards and achieving optimal results, a logic model is a useful vehicle for illustrating the educational process and its impact on students.

The conceptual framework includes feedback to students as part of the progression from outputs to outcomes and then impact. Student feedback is critical to any learning process. Target groups of students are aware of, receive, accept, and use information about themselves throughout the learning process. Feedback enables students to utilize what they are learning about themselves to evaluate the extent to which the skills, knowledge and perspective they have acquired enables them to contribute as viable members of a collaborative health care team. Similarly evaluation of learning outcomes will be disseminated to members of the synergy steering committee and other individuals represented on the synergy organizational chart. These people will utilize findings by relating student learning outcomes to practical applications in planning, policy making, program administration, and implementation of synergy. Students and key personnel within the institution will work together to exchange, synthesize and apply the information and ideas that emerge in all phases of the conceptual framework. The conceptual framework serves as a tool for ongoing evaluation because it systematically represents how situations, activities and goals are conceptualized and implemented. The framework offers a visual representation for pinpointing how and where the process is working and when and where the process may not be supporting desired learning outcomes.

A systematic line of questioning is embedded within each component to stimulate ongoing inquiry and new ideas. What is needed to create a learning opportunity? What resources are available to implement the proposed project? What actions, process, events, services, products, technologies, or other elements are used to implement the project? Will activities be exclusively offered to a specific targeted audience or members of a specific target system? Will activities be organized or “phased” in a particular manner?

The answers to these questions are framed as strategies for enabling students to attain goals in five overarching areas, including the areas of knowledge acquisition, observational learning, participatory learning, innovation development, and leadership building. Goals were formulated during the conceptualization of synergy and subsequently they are used to guide implementation of learning activities. Goal attainment is ultimately measured in terms of student learning outcomes. Learning outcomes are projected along a continuum. Eventually short-term outcomes will be expected of all students. These outcomes will reflect goals in the areas of knowledge acquisition, observational learning, and participatory learning. Measures will capture changes in perceptions or increased awareness of own and other health care professions. Observation skills may include observations of interprofessional teams and patients under simulated conditions. Participation will be an expectation of students as they are included in activities that require teamwork. Opportunities to realize short-term outcomes will be activities or experiences offered within the context of simulation labs, small group settings or classrooms. Mid-term outcomes will be expected of a select group of students who have the interest, motivation, and record of success to take advantage of more challenging activities. Mid-term outcomes reflect goals that target a higher level of participation, leadership, and innovation. Opportunities to realize mid-term outcomes will be supervised activities or experiences offered within the context of practice settings at UTMB or facilities with whom UTMB has a contractual agreement. Long-term outcomes will be measured through follow up surveys and interviews with graduates who are past participants.
in the synergy initiative. Self-report measures will capture whether they are engaged in collaborative interprofessional teamwork in their current work setting, and if so, the extent to which interprofessional teamwork impacts their perceived quality of health care delivery. Long-term outcomes are within the context of independent professional practice settings.

Evolution of the conceptual framework leads to theory development. It is our intention to explain how students who have the opportunity to learn through shared experiences with people from other professions gain a deeper understanding and a higher appreciation for team dynamics and the unique contribution of each member of the health care team. Our theoretical perspective defines the skills and behaviors that are critical components of “learning together to promote collaborative practice” (Hammick, 1998). These skills and behaviors are envisioned as theory-driven goals with defined levels of learning outcomes.

Theories are used to explain observed behavior and predict what will occur in the future. The theoretical perspective we have adopted will be used to explain how short-term student learning outcomes in the areas of knowledge acquisition, observational learning, and participatory learning are integral to interprofessional teamwork. As students progress through synergy, theory will serve to explain mid-term learning outcomes in the areas of advanced participatory learning, innovation development, and leadership building. Finally, based on our theoretical understanding of the contribution of skills and behaviors that emerge through the synergy initiative, we predict and, we will eventually strive to explain, the long-term impact of interprofessional education on workplace behaviors and skills. In summary, we will adopt a theoretical perspective to explain relationships among data driven measures. Our findings will be used to continually evaluate and refine our conceptual framework.

synergy stimulates “the interaction or cooperation of two or more organisms, substances or other agents to produce a combined effect greater than the sum of their separate effects.” In the spirit of collaborative teamwork, synergy energizes an educational process that integrates educational activities and experiences for students as well as people and resources at our academic health center.
VIII. Desired synergy Student Learning Outcomes

**synergy Goals**

The program envisioned is ambitious, reflecting an overarching goal of having a sustained, substantial impact on the education and future professional careers of our students. Given that the clinical systems currently modeling the desired practices have insufficient capacity to provide large numbers of students with enough experience to have a sustained, substantial effect, we envision the implementation of the QEP to start with education and relevant projects for many students and actual immersive clinical experiences for a far smaller number. As additional appropriate clinical settings become available, the number of students receiving these experiences will increase.

Figure 5

| Goal 1: | **KNOWLEDGE ACQUISITION.** Students will demonstrate understanding of the knowledge, skills, and roles of healthcare-related disciplines. |
| Goal 2: | **OBSERVATIONAL LEARNING.** Students will observe interprofessional teamwork and identify barriers and facilitating mechanisms to development and operation of such teams. |
| Goal 3: | **PARTICIPATORY LEARNING.** Students will practice and demonstrate optimal interprofessional teamwork in the direct or indirect delivery of healthcare to patients. |
| Goal 4: | **INNOVATION DEVELOPMENT.** Students will acquire skills to develop, implement, and evaluate interprofessional projects aimed at enhancing health and wellness. |
| Goal 5: | **LEADERSHIP BUILDING.** Students will be equipped to provide leadership in formulation and work of interprofessional teams, including the elimination of barriers to success. |

**Alignment of synergy Goals in Relation to the University of Texas Medical Branch at Galveston Priorities**

Interprofessional education represents an investment in the future of the university’s teaching, clinical, and research missions. A perusal of the newly established UTMB institutional priorities reveals the close alignment of synergy goals with the university’s priorities:

- **UTMB seeks to attract and retain a world-class workforce, and achieve recognition as a preferred employer and workplace.**
- **UTMB is working to attain national and global recognition as a leader in health care delivery and biomedical science by developing or expanding priority clinical and research programs and facilities.**
UTMB plans to generate financial strength with strategic investments in programs and growth in philanthropic support.

UTMB will achieve and sustain top-quartile performance in clinical outcomes, patient service, and employee satisfaction.

UTMB will continue to develop and implement model programs that optimize the health of the populations that we serve, including those that are vulnerable or underserved.

UTMB will achieve national prominence for innovative and effective educational curricula focused on evidence-based learning and practice across the health professions.
IX. Literature Review and Best Practices for Interprofessional Education

For over 30 years the Institute of Medicine has touted the importance of interprofessional / interdisciplinary teamwork. In 1978 the IOM recommended that medical students learn to deliver health care through a team approach as a part of their professional training. This recommendation was supported by the American College of Physicians in 1980 and by the American Nurses' Association that same year. The call was renewed in 2001 when the IOM identified “interdisciplinary teams” as one of the five priority areas for preparing the health care workforce in the Crossing the Quality Chasm report (Institute of Medicine, 2001).

Interdisciplinary teamwork was envisioned as improving the quality of health care and addressing the needs of an ever-changing health care delivery system by preparing the workforce to meet the challenge of making health care more patient-centered, continuous, and reliable. The strength of this mandate is unequivocal, however, the IOM also recognizes that medical education is notoriously resistant to change and that interprofessional education involves significant challenges. To develop strategies for infusing interdisciplinary teamwork in educational curricula, the IOM organized a Health Professions Summit to develop action steps over a three year period.

Background
Defining interprofessional practice and education as well as alternatives, is of utmost importance, not only to achieve intended outcomes, but even in the selection and enhancement of existing programs and for faculty and student development.

The Cochrane Collaboration defines an interprofessional education intervention as an opportunity in which members of more than one health and / or social care profession learn interactively together, for the explicit purpose of improving interprofessional collaboration and / or the health / well-being of patients / clients. Interactive learning requires active learner participation and active exchange between learners from different professions (Zwarenstein et al, 2000).

Interprofessional should be distinguished from Intraprofessional (uniprofessional) in which an individual from one profession works with another individual within his own profession collaborative. One such example might be an internist referring a patient to a gastroenterologist for specialty care. The collaborations between the internist and the gastroenterologist are not interprofessional because both health care providers are from the medical profession. Another commonly misunderstood concept is that of transprofessional education in which an individual of one profession is trained to provide services or expertise commonly associated with another profession. An example of transprofessional education might be a nursing student learning to train patients to ambulate with crutches – a service frequently provided by a physical therapist. Mitchell described the significance of the terminology and its effect on team functioning. She pointed out that different types of collaboration function differently and have different aims and processes (Mitchell, 2005). These factors are taken into consideration in the context of the spirit fueling synergy.
Institutional Readiness

For an institution to embark upon implementation of interprofessional education, full engagement must take place as evidenced by an explicit philosophy of IPE that permeates the organization. The philosophy must be well-known, observable, and measurable. Faculties from the different professions co-create the learning experiences. Students have integrated and experiential opportunities to learn collaboration, teamwork, and how it relates to the delivery of safe, quality care. IPE learning experiences are embedded in the curricula and part of the required caseload for students. Students demonstrate competence with a single set of interprofessional competencies such as those promoted by the Institute of Medicine. Organizational infrastructure should foster interprofessional by providing for support for faculty time to develop interprofessional education options, offer incentive systems for faculty to engage in interprofessional education, and integrate activities across schools and professions for students and faculty (Barnsteiner et al, 2007). Sustainability of programs relies upon the initiative being firmly embedded into the curriculum and the institution (Morrison, 2004).

Student Readiness

Practitioners often do not feel prepared to embark upon effective interprofessional teamwork. Educational interventions for developing such teamwork skills might help with overcoming some of the difficulties with team development. Gilbert and his group at the University of British Columbia develop a two-day interprofessional teambuilding workshop to help prepare students for interprofessional education experiences. The workshops included topics such as the purpose of interprofessional teams, group dynamics, making sense of multiple professional paradigms, and team management. Students were expected to develop skills and knowledge in professional roles and expertise, communication, conflict resolution, and important team issues. The workshops were well received and provide a model for introducing interprofessional education into the traditional curricular structure (Gilbert, 2000).

Approaches

Although there is a considerable body of literature on the characteristics of effective health care teams, somewhat less is known about what constitutes best practice in interdisciplinary education or how to measure interdisciplinary education learning outcomes. What is known is that there are discernable profession-specific differences in how students from different disciplines view one another.

Some interprofessional education researchers tend to adopt either a pragmatic approach to investigating the phenomena, or a conceptual or theoretical approach. The more pragmatic approach identifies structural or institutional challenges or concerns. This approach is problem-focused in that the goal is to design and then describe ways of implementing interprofessional education. The pragmatic approach may include discussion of costs and benefits, arguments about how and when different professions are to be included in educational activities, plans for how faculty are to be enticed to participate, resources that are needed and available, and acknowledgement that scope of practice issues are problematic. Authors describe practice settings and define populations most likely to be served. In short, literature representing the pragmatic approach offers insight into when, who and how to educate health professions students to work effectively in teams.

In contrast others raise questions or study the challenge of interprofessional education from a conceptual or theoretical perspective. The conceptual or theoretical perspective examines
how students develop profession-specific identity, values, and skills. Characteristics of effective faculty and preceptors are of particular interest. Questions may focus on attitudes, behaviors and perceptions that are similar to those held by members of highly collaborative and high functioning teams. This literature would suggest that students need to develop some sense of identify and autonomy before they are ready to appreciate and value the contributions of other members of the team.

Regardless of the approach, effective interprofessional training requires participation, training in group skills, information sharing, networking, and critical reflection (Gilkey & Earp, 2006). Indeed, when health care providers from different professions work together in the interest of a patient, collaboration and cooperation begin to buffer the fragmentation of health care education and practice (D’Amour and Oandasan, 2005). Rawson describes two versions of effects of interprofessional work. One model is additive whereby each profession contributes their own work. The other model, the model that we are pursuing through synergy is multiplicative, i.e. interprofessional working results in more than the sum of the parts. This model of interprofessional work generates new potentials and enhances individual contributions (Rawson, 2005). Functional interprofessional discussion leads to more accurate and effective decisions than the sum of all individual opinions. It also prompts consistency in the standard of patient management and communication (Ruhstaller, et al., 2006).

For implementation, colleague institutions have found that focusing on fertile areas is most productive. Interprofessional educational opportunities are readily available in contexts such as in rural health, disaster preparedness, transitions (acute setting to the community, for example), and in areas such as professionalism, patient centered care, and patient safety and quality (University of Minnesota, 2007).

Some of the approaches that have been adopted include: integrating service learning opportunities into curricula (community development aspect is critical under this model), providing workshops, offering problem-based small group learning, providing specialized community-based fieldwork / internship experience in rural or underserved setting, primary care clinic internship with a “lunch time” interprofessional team that is videotaped and discussed afterward, a community-clinic experience in which interprofessional teams hold debriefings at end of the shift, quality improvement planning processes in an interprofessional group, and case competitions. Some universities offer students the opportunity to develop innovative projects in the context of interprofessional teams (Reeves, et al., 2002) (Rodger, et al., 2004) (Urbina, et al., 1997) (Reynolds, 2003) (Lloyd-Jones, et al., 1998) (Hughes and Lucas, 1997) (Goelen, et al., 2006) (Harward, Tresolini, and David, 2006) (Walrath, et al., 2006) (Clark, 1999) (Richardson, et al., 1997) (Richardson, et al., 1999) (Fallsberg and Hammar, 2000) (Hoeql and Parboteeah, 2006). These models provide information on curriculum development, implementation, evaluation, and revision that is invaluable for centers embarking upon initiating or enhancing interprofessional education on their campuses.

While simply shadowing individuals from other professions or attending shared lectures or readings may impact knowledge, when offered alone have not been found to be effective in changing attitudes or behaviors. Richardson describes a comprehensive geriatric assessment by IP health care workers as educational experience for 30 students over three years in Ontario. Students engage in weekly problem-based tutorials about team functioning in a geriatric day hospital. Nursing, PT, OT, social work, and therapeutic recreation students participated. Outcomes were measured using the Interprofessional Perception Scale and the Team Observation Protocol. This group demonstrated a significant difference in knowledge
but not attitudes. The length of the experience for each individual student may have not been sufficient to effect changes in attitudes (Richardson, 1999).

Students should be challenged with increasingly complex, reality-based tasks using cooperative learning – build content across courses started with paper cases and two learner groups to more complex cases with four to five learner groups then to simulation, then live patients (D'Eon, 2004). Others have pursued a similar approach, in which they describe an evolutionary model for their curricular framework characterized by exposure -> immersion -> competence (-> mastery) around constructs such as values and ethics, communication, and collaboration. The early steps in each of these models are essential but not sufficient.

Each of these approaches supports the conceptual model with which synergy is designed. Students start with a low fidelity model that simulates real practice. That experience is expected to impact perceptions, knowledge, and skills. Subsequently, students move to higher fidelity models involving various degrees of participation in actual health care settings that foster development of collaboration, leadership, self-reflection, and self-evaluation. Finally, students embark upon their own independent practice in which improved quality of care, reduction in errors, and enhanced efficiency result from a strong foundation of interprofessional education that is evolutionary and reinforced in multiple venues (Hammick, 2000).

The approaches of some of our colleague institutions that were discussed at an Interprofessional Education Conference sponsored by the University of Minnesota (2007) are described below:

- The University of South Dakota provides workshops for their students to help them learn about other health professions, participate in an interdisciplinary team, and develop positive attitudes toward aging, disabilities, and cultures. Students and faculty members from twelve health professions work together in teams to role play cases of older adults, develop plans of care, and present their plans and receive feedback. Students and faculty alike agreed that the intervention enhanced their learning or teaching, leads to improved patient care, increased their respect for other professions, and enhanced their own team skills.

- The University of Pittsburg offers a course to nursing, medical, pharmacy, and social work students in which they learn how to design care plans based on input from multiple professions. They learn team communication skills and learn to recognize their own limitations, i.e., when seeking assistance from another professional might be appropriate. The course offers some didactic strategies, but also has an experiential component and small group discussions.

- The University of Toronto offers an experiential learning opportunity in which ten professions are represented. The experience involves case-based discussions over one evening and two days.

- The University of North Dakota's interprofessional course focuses on a diabetes case study. The program leaders prepare mentors for the experience over four sessions in which they provide team building exercises and instruction on facilitating small groups. Students who took the course reported improved knowledge of other professional roles compared with their colleagues.

- A Health Professional Certificate is offered at University of Louisville. Students enroll in the Graduate School and complete four 3-credit hour classes on research methods, program planning and evaluation, college teaching, and adult development and learning.
Seamless Care: An Interprofessional Education Project at Nova Scotia's Dalhousie University prepares pre-licensure health care students “to become competent collaborative practitioners by creating an innovative model of care for patients with key health conditions who are transitioning from acute care to the community.” Students from dental hygiene, dentistry, medicine, nursing, and pharmacy volunteered for project. Discipline Preceptors were “selected” from academic faculty and Integrative Preceptors were recruited from clinical sites. Patients / family volunteers were solicited from: the health authority’s acute stroke program, integrated palliative care, a center for health care of the elderly, diabetes case management, gastroenterology, hypertension clinic, heart failure clinic, physical medicine and rehabilitation, and a community based long term care facility. The average time in project for students was ½ day / week for eight weeks. Students / preceptors saw patients in rehabilitation, transitional, long term care settings, patient homes, and primary providers’ offices. Competencies included communication, strength in one’s professional role, knowledge of the professional roles of others, teamwork, leadership, and negotiation for conflict resolution.

The University of Saskatchewan offers Competencies of Interprofessional Collaboration prepared students for IP team experiences in clinical practice focusing on comprehensive key competencies and behavioral indicators of interprofessional team practice for senior students and practitioners.

Other interprofessional offerings include a shadowing experience for nursing and medical students at Indiana University and a case-based Schwartz Center Rounds at the University of Nebraska Medical Center.

Teams

Effective teamwork indicators include organizational benefits like reduced length of stay, reduced unplanned admissions, and better access for patients. Team benefits include improved coordination of care, efficient use of health care services, enhanced communication, and professional diversity. Individual benefits may be enhanced satisfaction and better outcomes for patients, enhanced job satisfaction, greater role clarity, and enhanced well-being for team members (Mickan, 2005).

A very important component to the success of interprofessional education is providing adequate time and support for interprofessional team development. The initial stage of team development is characterized by a lack of a shared vision of the team’s mission and roles. Members see the mission and roles as imposed by outside authorities. There is often a pervasive state of ambiguity, confusion, and alienation in the initial stage. The developing team then enters the storming stage during which they may become polarized in a power struggle characterized by bullying by one member and perhaps avoidance or backstage complaining and passive resistance by others in the group. The third stage is norming during which the team negotiates its culture. Finally, in the performing stage, there emerges a consensus of mission, division of labor, and expectations. The team goes through work cycles, monitors group process, resolves conflicts, and celebrates its accomplishments. The performing stage is characterized by role bending with open discussion and consensus (Farrell, Schmitt, and Heinemann, 2001).

In the Healthy Teams mode developed by Mickan and Rodger, characteristics of effective teams are identified: team purpose, team structure with goals and leadership, team processes for communication and cohesion, and individual contribution of mutual respect. A four-stage guide for Reflective Analysis and Team Development is offered, including
reflecting on current teamwork, comparative appraisal of team’s performance, planning team improvement strategies, and implementing and evaluating change (Mickan and Rodger, 2005).

Characteristics of effective teams that are successful and sustainable include a high degree of interdependence, strong sense of organizational empowerment, self-determination, competence, commitment, and genuine concern about the quality of work being performed. To optimize productivity, health care teams must abandon traditional competition between departments and disciplines (Wilson, 1998). Multidisciplinary teams need mature leadership, a democratic climate leading to open and constructive discussion (Ruhstaller, 2006).

Dr. Curtis and his colleagues at the University of Washington compiled a task force to initiate and improve an interdisciplinary quality improvement program in their critical care unit. They describe an effective guide to using a step-wise approach in developing interdisciplinary work focused on quality improvement and provide suggestions for evaluation and maintenance of such programs (Curtis, et al., 2006).

**Challenges in Interprofessional Education and Teamwork**

The literature is replete with explanations for why interdisciplinary teamwork is difficult to implement and measure.

Challenges faced by institutions implementing interprofessional education are varied, but most site professional culture issues as most pervasive. Traditional approaches to professional training does not support functional teams, but rather professional seclusion. The acculturation of a student with his / her profession’s value system is subtle (Roberts, 1989) and often starts before the first day of professional training. Oftentimes, interprofessional education may be perceived by individuals as impinging on health professional roles and identity. Power and status differentials as well as a traditionally hierarchical approach to division of labor work against team-building (Barnsteiner, et al., 2007) (Hall, 2005). Individuals’ personal factors related to different sources of control, different reward systems, and perceived status gaps may impede effectiveness of interprofessional teams. If individuals perceive different goals (rather than a shared goal) and are primarily committed to their profession rather than the team, then teamwork is dysfunctional and ineffective (Freund and Drach-Zahavy, 2007).

Furthermore, the practical issues of bringing faculty and students from multiple disciplines together to learn about one another’s roles and to practice collaboration and teamwork – course scheduling, faculty interest and expertise in IPE, culture change, institutional policies – make implementation challenging.

Many health care providers have poor or no knowledge of how to collaborate, particularly outside their own professions. Even those who believe in interprofessional collaboration do not do it effectively (Freund and Drach-Zahavy, 2007).

Skepticism also plays a role in slowing the progress of interprofessional initiatives. Health care providers may fear adverse effects on the health care workforce by either increasing demand beyond personnel supply or by blurring the professional role and responsibility of some providers. Cost / benefit issues may be misunderstood.

Given these challenges and the need for genuine culture change, faculty development is imperative. Faculty from each profession may need training in the management and leadership nuances associated with fostering interprofessional team process. They need to
honed their skills in conflict resolution. A self-reflective process is also important for definition of professional identity and role negotiation.

Dr. Mitchell and colleagues published a guide describing one approach to faculty development. Through the Faculty Leadership in Interprofessional Education to Promote Patient Safety Project, they formed an interprofessional team of educators, patient safety officers, and federal program directors to create a curriculum for education health professions faculty leaders. They found that their potential scope of influence was tremendous by offering workshops to a broad sector of the faculty population (Mitchell, 2005).

**Evaluation and Assessment**

Clearly the Institute of Medicine has stimulated new lines of inquiry.

In 2002, Freeth, Hammick, Koppel, Reeves, and Barr conducted an examination of evaluations in interprofessional based on a systematic review of Medline, CINAHL, and the British Education Index. They found that the literature demonstrated several types of outcome measures, including those documenting learners' reactions, changes in attitude or perception, changes in knowledge or skill, behavior changes, and those focused on measuring changes in the organization or delivery of care and/or benefit to patients or clients.

Mitchell and her colleagues developed new models of clinical education that engaged students from seven health care professions through funding of the Health Sciences Partnerships in Interdisciplinary Clinical Education at the University of Washington. In 2000, they published a guide for managing outcomes measurements for their program. The approach is comprehensive and inclusive of each of the indicators above (Mitchell, et al., 2000).

Freeth and his colleagues limited their inquiry to programs in which members or students of two or more professions were associated with health or social care and engaged in learning with, from, and about each other (not shared listening, shared lectures). Most centers cited improvement in care or improvement in interprofessional collaboration as their stated aims. Strategies included exchange of information and sharing of experience, learning from peers in small group - problem solving, practice-based educational opportunities, and role-playing.

Assessment of change in knowledge and skill before and after was sought via questionnaires, interviews, observation, and analysis of reflective diaries. Changes in behavior were assessed by measuring change in cooperation and communication and/or development of closer links between participants. Assessment of change in organization practice was sought via clinical audits and questionnaires. Potential benefits to patients were seen in satisfaction surveys and clinical outcomes indicators.

Freeth and his group found no papers that reported all negative outcomes which was unfortunate as much can be learned from disappointment (Freeth, et al., 2002). Understanding the features of the strategies and initiatives that do not succeed is imperative (Morrison, 2004).

Evaluation of Instruments used to assess the impact of IP training on health professions students include such measures as the Interprofessional Perception Scale described by Drinka in 1991 and the Team Observation Protocol from Ducanis and Golin, 1979 which have served those trying to assess the effectiveness of interprofessional education. The Group Growth Evaluation Form was designed to evaluate group function, examine objectively the
participation of group members, and explore the norms developed by the group (Pfeiffer and Jones, 1974). The Team Orientation and Behavior Inventory (Goodstein, Cooke, and Goodstein, 1983) was created to help trainer distinguish issues of values from issues of skills in evaluating team experiences.

In an attempt to conduct a systematic review of interprofessional education, Cooper, et al. (2001) cited the importance of defining the concept of “shared learning.” To avoid confusion they adopt Hammick’s (1998) view of multiprofessional education as “simply learning together” and interprofessional education as “learning together to promote collaborative practice.” Cooper, et al (2001) utilized the Cochrane collaboration, specifically the Cochrane Effective Practice and Organization of Care Group (EPOC), for systematic reviews of interventions that include interprofessional learning. Drawing upon the work of the EPOC, as well as studies they identified independently, the authors evaluated 141 studies on “interdisciplinary education.” Thirty articles (21%) published between 1994 and 1999, met inclusion criteria for what they termed a generalized synthesis of the evidence. Of specific concern was the use of non-validated instruments to measure outcomes. Virtually no standardized assessments were included in assessment of student performance. Assessment of educational intervention utilized questionnaire type tools (67%) and narrative inquiry (30%). “Of the 20 students / evaluations that used questionnaires, only seven (35%) used validated instruments” (p. 232.). Overall Cooper et al. found lack of methodological rigor in interprofessional research and poorly developed outcome measures.

To address the lack of instrumentation, Heinemann, et al. (1999) published a scale, based on a 2-factor solution, designed to evaluate the development of attitudes toward the health care team. These two factors were “team value” and “attitudes towards costs / benefits of team care.” Subsequently Hyer, et al. (2000) conducted an exploratory factor analysis on the same scale. They arrived at a 3-factor solution with all 21 original items included. Factors included the constructs of team value, team efficiency and shared leadership. The authors note that although the factors map conceptually onto those identified by Heinemann et al (1999), “some important philosophical and methodological differences are noted” raising the issue of construct validity for this scale (p. 249).

Parsell and Bligh (1999) published the original version of the Readiness for Interprofessional Learning Scale (RIPLS) in 1999. The only aspect of reliability considered by the authors was internal consistency. A revised version for use with undergraduate students was published in 2005 (McFadyen, 2005). That paper also reported internal consistency of the revised version. Subsequently a sample from one professional group (n = 65) was used to assess test-retest reliability, over a one week period, of each of the 19 items and of the sub-scale totals, using Weighted Kappa and the intra-class correlation (ICC) respectively. The test-retest reliability of the individual items using Weighted Kappa was satisfactory, with the exception of two items. The ICC results for the sub-scale totals were all in excess of 0.60 with the exception of sub-scale two. This revised version of RIPLS would appear to have good reliability in three of its sub-scales but further research, with larger samples, is required before the fourth sub-scale can be reliably assessed (McFadyen, 2005, 2006) (Reid, 2006).

Perhaps the instrument receiving the most attention, the Interdisciplinary Education Perception Scale (IEPS), was introduced by Luecht, et al. (1990). Professions represented in the original sample included 143 subjects that completed an 18 item questionnaire. Normative data for the IEPS has been reported by Hawk, et al. (2002) who found differences among physician assistant students, chiropractic students and medical students but not among medical students and osteopathy, physical therapy nursing, podiatry or social work
students. However, a 2004 investigation of the effects of interprofessional rural training on students’ perceptions of interprofessional health care services (Mu, et al., 2004) using the IEPS found a significant difference between summated pretest and posttest scores, and a significant interaction between duration of training and pretest and posttest scores, but no significant differences among participants from different professions. Goelen, et al. (2006) employed the IEPS to measure improvements in attitudes towards interprofessional cooperation as an outcome measure of improvement in attitudes towards interprofessional collaboration among undergraduate students who engaged in problem-based learning activities. The authors reported that the IEPS “may be suitable for measuring the effect” of curricula. Using the IEPS they found statistically significant improvements in the overall attitudes of male students in an intervention group, and in attitudes pertaining to the competence and autonomy of individuals overall within the same profession.

Most recently, McFadyen, Maclaren, and Webster (2007) questioned the stability of the IEPS in term of test-retest reliability of the items and sub-scales when used with undergraduates. They report the development of an alternative sub-scale model for the IEPS based on a sample of 308 students. Various aspects of the reliability of this revised model based on a subsequent data set of 247 students are also reported. This revised model appears to be stable for use with undergraduate students yielding Cronbach Alpha values for two of the sub-scales greater than 0.80 and test-retest weighted kappa values for items being fair to moderate.

Pooling data from 169 health sciences students, Slack, Coyle and Draugalis (2001) evaluated instrumentation, including the IEPS, used for assessing training in interdisciplinary teamwork. The pretest-posttest instruments showed almost no change (only 2 of the 27 effect sizes were greater than 0.3), whereas the retrospective pretest discerned moderate to large change (effect sizes were 0.4 to 1.5). However, written comments did show substantial change. It may be that retrospective pretest and written comments are the most efficient method for evaluating an interdisciplinary program.

Lessons Learned / Conclusion

Much can be learned from review of published literature and networking with other institutions that have embarked on interprofessional education. Any successful initiative has started with tailoring the strategy to unique features of the institution. Successful groups emphasize the importance of affording flexibility to the process to allow interprofessional relationships and collaboration to emerge naturally. They suggest using a positive approach to assessment by focusing on what works and enhancing it, particularly since evaluation is often perceived as threatening. Clearly, any strategy to implement interprofessional education must address these potential barriers and must be tailored to the unique climate of the institution. Communication and trust leading to effective discussion and conflict resolution are essential as are honest self-reflection and development of skills in team process.

Freeth and his colleagues, after thorough examination of evaluation strategies used in interprofessional education, have determined that more research is needed. Comprehensive evaluations of different types of interprofessional education, evaluation of innovation, and prospective studies with lengthy follow-up periods would be most helpful in moving the field forward. They suggest that educational innovators should operate a plan-do-study-act cycle to ensure high quality, well-targeted offerings.
Through *synergy*, we at the University of Texas Medical Branch at Galveston, plan to build upon what we have learned and contribute to moving the field of interprofessional education forward.

**Acknowledgement**

In the course of creating *synergy* we have sought to learn from our colleagues and draw on the best practices they have established; in so doing we have become conversant with C³ the Medical University of South Carolina (MUSC) Quality enhancement Plan. We have greatly valued C³. We are striving to achieve the high standard set by MUSC in C³.
X. synergy Actions to be Implemented

We propose to develop an institution-wide menu of interprofessional activities that are offered to students throughout UTMB. The extent to which students participate and pursue goals and objectives offered by the QEP will vary depending on their professional goals, the potential educational value of their participation, their own interest and motivation, and practical considerations such as scheduling. Students choose from a lengthy list of interprofessional activities including Small Group Learning Activities, Practice and Service Learning Activities, Simulation-based Activities, and Student-initiated Projects. Specific details of the proposed activities are described below. Each of these activities will be conducted with representatives from at least two or more disciplines. Interprofessional teams involved in the offering of these experiences have a common goal: all highly value the activity and have an understanding of, respect for, trust, support and appreciation of all professionals on the team. They also have an understanding of basic group skills, such as problem identification and solving, negotiation and conflict resolution, future planning, and role and responsibility identification.

Ultimately, we hope to expand the program to include all UTMB students. We will develop an institutional online portfolio for each student to serve as a repository for documentation, assessment, evaluation, and reflections on their interprofessional educational experiences. We anticipate that as our Interprofessional Education Program matures, the increasing number and quality of program components will enable us to ratchet up requirements of the students.

In the early years of training, the students will focus on the first three “core” goals: knowledge, observation, and participation. As their basic experience in the interprofessional team process grows, they will be equipped for embarking on leadership roles and will likely have encountered areas of need that allow them to pursue individual activities and thereby achieve goals four and five – leadership and innovation.

A. Small Group Learning Activities

Problem-based learning (PBL) is an ideal first activity for students as they begin to learn about other professions while simultaneously forming their own professional identity. Students will work through cases prepared by interprofessional faculty teams. Some cases will focus on patient conditions, while others will focus on team-based healthcare principles, processes, and dynamics.

Cases will be written or revised and implemented for several types of health profession students, providing an opportunity to start early in the QEP implementation with simpler cases involving two or three professions and adding greater complexity in subsequent years. Ideally each team of students will work together on several cases over an extended period of time (e.g., a semester).

The knowledge objectives targeted by these exercises will be assessed by written examination items. The behavioral and performance aspects will be assessed by faculty participating in the exercises. The latter assessments will focus on student participation, collaboration, and effective teamwork.

Team Learning (TL) builds on the PBL concepts and requires all team members to apply their knowledge and to rely on others with complementary knowledge to solve patient
problems in a performance-assessed and mildly competitive environment. Ideally each team of students will work together on several cases over an extended period of time (e.g., a clinical module). Team Learning involves groups of approximately 25 to 35 students. The students will be from multiple professions (e.g., medicine, nursing, occupational therapy, physical therapy, clinical laboratory science) and will (1) be given reading assignments, (2) take readiness assurance tests (RATs), and (3) participate in case-based application-focused exercises (the three components of TL). As with PBL, understanding and managing the cases will require the unique knowledge and skills of each profession. To enrich these experiences, teamwork principles, processes, and dynamics will be incorporated into the cases.

Measurement of outcomes for TL is accomplished by individual and group RATs and the degree to which the team can answer questions collaboratively. Impromptu group problem-solving is assessed via the Application-Focused Exercise. Peer evaluation is also an integral part of the TL experience.

The costs for implementing the TL activities include faculty time for case development and course integration and faculty time for teaching.

**B. Practice and Service Learning Activities**

Students will select from a variety of team-based interprofessional activities, ranging from clinical care to community service. Each team will be composed of representatives from at least two disciplines, drawn from the Schools of Medicine, Nursing, and Allied Health Sciences (Clinical Laboratory Science, Occupational Therapy, Physical Therapy, Physician Assistant Studies, and Respiratory Care), and Biomedical Sciences. Shown below is the progression of practice and service learning activities over the first five years of synergy.

**Year 1** project activities will showcase one of the existing exemplary interprofessional team experiences already in practice at UTMB and add activities to include additional learner groups. Existing activities will be evaluated and changes will be proposed to address outcomes and enhance the impact of these experiences.

**Year 2**, another existing interprofessional team experience will be enhanced and one to two new learner groups will be incorporated into existing programs.

**Year 3**, the activities that have been enhanced to incorporate more effective IP approaches will be re-evaluated and adjustments will be made based on data collected from the evaluations. Again, another 1-2 existing interprofessional team experiences will be incorporated.

**Year 4**, feedback will be addressed regarding the specific team-based interprofessional activities offered. As previously, 1-2 more student learner groups will be incorporated, along with continuing evaluation.

**Year 5**, each of the learner groups listed above will be incorporated into activities that are appropriate and educationally relevant to their professional training. Ongoing evaluation of the experiences will inform program improvement as described below.

**Determining the suitability of synergy learning experiences**

A feasibility study of proposed experiences will be conducted, with specific concerns to be addressed, including whether schedules for all four schools can be altered to facilitate joint
interprofessional experiences. Student learning will be assessed using written essays or other scholarly products selected by faculty leaders. One component of the required content of these essays will be keyed to synergy objectives. Assessment of students' knowledge of roles of other health care professionals will be conducted for a variety of situations / settings. This may include knowledge questions such as "What is the role in this setting of a respiratory care therapist or a nurse?" Data from both faculty and students will also be collected through written surveys and focus groups. These data will include information specific to a particular setting, such as:

1. how the role of the students' own profession setting is complemented by the roles of the other healthcare professionals involved;
2. what a variety of other professionals would contribute to patient care in the setting;
3. how the student will describe his / her professional responsibility to the specific patient; and
4. how other healthcare professionals will describe their responsibilities in the setting.

In addition, students will be asked to describe elements of effective teamwork observed in the team meeting and to describe what teamwork elements did not work well and why. Student clinical performance may be assessed in order to measure knowledge, skills, attitudes, and behavior. Finally, longitudinal tracking of students’ perceptions of the value / roles of other professionals will be collected.

Existing synergy practice and service learning settings
As noted above, UTMB provides an environment rich with interprofessional education experiences in the hospitals, in clinics, in the classrooms, and in the community. Examples of existing interprofessional team experiences are described below. Each of these practice and service learning activities may serve as building blocks for implementing and sustaining this arm of synergy. Experiences at other institutions suggest that each of the settings noted below may greatly enhance the quality of the synergy educational experience and the outcomes intended.

1. UTMB Children’s Special Services
Children’s Special Services (a.k.a. Pediatric Blue Team) includes a number of different disciplines that work together in the care of children with chronic conditions. Occupational therapists, physical therapists, speech pathologists, a nurse practitioner with expertise in spinal cord injury, two dietitians, a school liaison, two secretaries, a chaplain, two child life therapists, and a care manager all participate in the comprehensive care and discharge planning for these medically fragile patients. The team conducts a monthly orientation for learners rotating through the service. Continuous process improvement is addressed at monthly pot luck meetings and yearly retreats during which the team engages in brainstorming and planning for the future.

Members of the team literally work side by side and communicate with one another regularly. Weekly team meetings provide a venue for discussion of each patient’s needs. Learners of all types are included in these interprofessional activities so that they may not only become familiar with the specific offerings of each of the represented disciplines, but also so they can observe and participate in collaborative, collegial teamwork.

2. UTMB Acute Care for the Elderly (ACE) Unit
The ACE Unit was designed as a service line for the comprehensive care of geriatric patients at UTMB. The individuals selected to work in the ACE unit truly embrace the value of the interprofessional team. The team is represented by a wide cross-section of professions. Each team member has very high quality communication skills. A strong emphasis on including and assisting learners has always been a paramount goal of this interprofessional team. While excellent patient care is the primary goal, teaching is certainly a close second!

3. St. Vincent’s Clinic, Galveston
St. Vincent’s Clinic integrates medical students and Physicians’ Assistants (PA) students. It is a student run clinic in which PA and medical students, supervised by faculty physicians, interview, examine, and treat uninsured and underinsured, low-income patients in the Galveston community. The PA and medical students work together and with the faculty to teach each other medical skills, treat patients, and handle administrative aspects of the clinic, including patient financing.

4. UTMB Spirituality Course
For nine years, UTMB has offered an interdisciplinary course on Spirituality and Clinical Care. The course brings together large and small groups of nursing, medical, and allied health students in team based-learning settings to discuss issues related to spirituality in health care. This is an excellent opportunity for these students to meet each other face to face and experience the others’ perspectives.

Faculty from the School of Nursing, the School of Medicine, the School of Allied Health Sciences, and the Institute for Medical Humanities have designed and implemented this interprofessional learning opportunity.

5. UTMB Student Home Visit Program
The Home Visit Program is organized by the Schools of Allied Health Sciences and Medicine. Physical therapy and medical students visit families of diverse backgrounds in their homes. Each discipline shares their approach to assessing and reporting findings and recommendations. Medical students submit a reflective essay and discuss the visit in the context of the Practice of Medicine I Course. PT and OT students submit an environmental assessment and receive credit for their participation through the Interdisciplinary Studies course in the SAHS.

6. UTMB Hurricane Evacuation Assessment Team
The Hurricane Evacuation Assessment Team is a student organization and a part of the official Emergency Plan for UTMB. Two students co-lead the effort with a faculty mentor from Allied Health. The students who belong to this group have volunteered to help with the evacuation of special populations from Galveston via buses going to Austin. There are over 100 medical, nursing, and allied health students involved.

7. Austin Clinical Education Center
UTMB is participating in the development of the clinical education center in Austin that will be housed in the space vacated by the Children’s Hospital of Austin. The entities participating in this endeavor are UTMB, the University of Texas at Austin, Austin Community College, and the Seton Family of Hospitals. The space will house a simulation center and a standardized patient program, as well as classrooms and seminar rooms. A curriculum planning team with representatives from the participating entities is working to develop interdisciplinary course
offerings. Courses planned to date will include health ethics and a health care policy elective. Interdisciplinary case simulations and standardized patient experiences are also being planned.

8. UTMB Ambulatory Community Elective Course
The ACS (Ambulatory Community Selective) in Internal Medicine includes a required visit to a community healthcare resource (hospice, home health, nursing home, family planning, etc.) as well as a visit to an alternative healthcare provider (acupuncturist, chiropractor, etc.). A brief paper is submitted following the visits. Through the paper, students are able to share information such as what various community resources could offer our patients, how they operate, and how they interact with physicians. Visiting the sites has provided a better understanding of what types of patients might be appropriately referred to each of these resources in the future and what those patients could expect from that referral.

The value of the existing practice and service learning settings
An important challenge is to identify ways to enhance student learning in the context of these existing teams. In many cases, the emphasis of each of the teams has been largely on providing excellent clinical care. Student learning has been a fortuitous “side effect” of the exposure of learners to these models of care. Each of the groups described above have proposed ways by which student learning can take a more visible, deliberate place in the day-to-day functioning of the teams.

Children’s Special Services already provides the opportunity for acquisition of knowledge about specific roles on the interprofessional team. Learners observe team dynamics and collaboration on a daily basis in the inpatient and ambulatory settings as well as in the context of team meetings and activities. Focus groups and meaningful discussions will help solidify this knowledge and assist learners to contextualize the interprofessional team process. Learner participation may be accomplished in weekly team meeting and at the bedside. When appropriate, students may take a leadership role by running team meetings or conducting family meetings. Because Children’s Special Services has a well-functioning interprofessional team with an existing educational infrastructure that includes students of several health professions, it will serve as the pilot practice and service learning activity. We hope to increase student exposure to faculty members in professions other than their own – in team meetings and at the bedside.

The interprofessional team providing care in the Acute Care for the Elderly unit needs to have “faculty champion(s)” to help to re-visit and restructure the team’s goals as a result of major changes brought about by financial restructuring of the clinical enterprise. The backbone of a nation-wide exemplar Interprofessional team is still present, but needs to be reinvigorated. Once a faculty champion helps them re-visit the educational goals for the team, the team will be able to come up with ways to provide that education.

A specific example of learners participating in the interprofessional team process may be represented by an opportunity in which the learners present cases and carry out a discussion on a plan of care. This activity would require coordination of multiple professions coordinating schedules to provide prepared learners to interact on their patient’s behalf. This sort of activity could be done with minimal disruption of the present team goals and job tasks.

Another proposed activity for students would be an opportunity for interprofessional students to be mentored by interprofessional team members to conduct a spiritual assessment as
part of the assessment / plan of care and to practice in a holistic manner-tending to the patients' mind, body, and spirit demonstrating a compassionate presence at the bedside of the dying patient, for example.

Other enhancements specific to the selected interprofessional teams will be developed as the project evolves in years 3 through 5. Program selection and enhancement is described below. Assessment from the initial pilot groups will inform this iterative process of continuous program improvement.

C. Simulation-Based Activities

UTMB has two excellent simulation centers – one in the School of Nursing, the other in the School of Medicine. These centers provide a range of simulation activities and assessments based on low-fidelity models up to exceptionally high fidelity experiences. Simulation activities draw upon a wide variety of topics.

We propose to begin incorporation of simulation activities in the QEP during year 3 of the project. Potential simulation activities that may be enhanced or created include: first responder training, end-of-life care, chronic wounds management, telemedicine for virtual consults, web-based problem based learning scenarios, post-stroke rehabilitation, and patient safety and error reduction.

Medical, nursing, graduate, and allied health students may participate in some or all of the proposed activities. Specific implementation plans for each activity are included in the Simulation-based Activity Table included in the appendices.

Assessment of the simulation activities will be based on knowledge questions, pre / post attitude surveys, and performance evaluations reflecting skills and behavior. Detailed assessment plans for each activity are included in the activity chart.

The cost of implementing simulation activity enhancements include personnel time for scheduling, assessment costs, simulation center utilization costs, funds for non-faculty participants, standardized patient costs for recruitment, training, portrayal time, and faculty time to develop, implement, and evaluate activities. Telemedicine simulations also require access to appropriate equipment, line time for connections (if applicable), and technical support. Web-based simulations require web developer’s time and web-site maintenance.

Because the simulation activities are relatively more costly than some of the other proposed approaches, activities will be enhanced and implemented in a gradual fashion. The full complement of proposed activities will be retained, though, so as to allow for growth of this portion of the project as resources permit.

D. synergy Student Projects

As students progress through a variety of interprofessional activities, they will become better acquainted with colleagues in other professions and also identify some of their own career interests. In years 4 and 5 of the project, students will have the opportunity to plan and implement an interprofessional project aimed at addressing a specific identified need. The student will join like-minded students from other professions to design and implement a health-related project in a clinical or community setting. The projects will be based on needs assessments carried out by the interprofessional student team. The team will then develop a proposal that is approved by the Interprofessional Education Steering Committee and designated mentor(s). The student team will create a timeline for key steps to be completed,
design the measurement criteria by which they will evaluate their project, and identify resources required. They will be guided through application for external funding as appropriate. The team will then work together to implement and possibly complete the project, analyze the outcome, and evaluate the project. They will summarize their experience and make recommendations for further actions to address the identified need.

Possible domains of projects include public health, cost effectiveness analyses, error reduction, outcomes assessment / quality improvement, and healthcare policy. Projects may be conducted at UTMB hospitals or clinics or in the community. Mentors for projects may be selected from the faculty of the four schools, hospital / clinic administrators, local public health officials, legislators / staffers, or university leadership.

Each student team must be comprised of at least three students from different health care professions. If more than three students participate in the project, there may be a maximum of two students representing any one profession.
XI. Matching synergy Activities with Goals and Outcomes

Table 2
Goal-related synergy Outcome Measures

<table>
<thead>
<tr>
<th>Goals</th>
<th>Anticipated Outcome Measures</th>
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| **Knowledge Acquisition:** Students will demonstrate understanding of the knowledge, skills, and roles of healthcare disciplines. | o Items that test knowledge and application of knowledge regarding professional roles and teamwork will be added to existing written and clinical skills examinations.  
    o Students will conduct self-assessments of knowledge, attitudes, and skills in interprofessional teamwork and professional roles. |
| **Observational Learning:** Students will observe interprofessional teamwork and identify barriers and facilitating mechanisms to development and operation of such teams. | o Assessments of clinical performance in interprofessional health care delivery will be completed by supervising faculty.  
    o Students will submit reflective writings after interprofessional educational experiences. |
| **Participatory Learning:** Students will practice and demonstrate optimal interprofessional teamwork in the direct and indirect delivery of healthcare. | o Students will be evaluated on their interprofessional teamwork in problem-based learning and team learning as well as clinical performance.  
    o Students will complete attitude surveys following participation in interprofessional activities. |
| **Innovation Development:** Students will acquire skills to create, implement, and evaluate interprofessional projects aimed at enhancing patient health and wellness. | o The quality and potential impact of projects proposed by interprofessional student groups will be evaluated. |
| **Leadership Building:** Students will be equipped to provide leadership in the formation and work of interprofessional teams including the elimination of barriers to their successful operation. | o Students will conduct self-assessment and peer evaluation reflecting interprofessional teamwork.  
    o Project outcomes will be assessed within the context of the intended goals. |
### Table 3
Instructional Methods and Educational Activities Contributing to synergy Goals

<table>
<thead>
<tr>
<th>Goals</th>
<th>Examples of Instructional Methods and Activities</th>
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| **Knowledge Acquisition**: Students will demonstrate understanding of the knowledge, skills, and roles of healthcare disciplines. | o Students from different professions will work together to solve a clinical case  
 o Students will participate in case-based application-focused exercises in the context of interprofessional groups  
 o Students will learn about team-based interprofessional health care by participating in a clinical or service learning activity  
 o Students will participate in simulation activities and assessments |
| **Observational Learning**: Students will observe interprofessional teamwork and identify barriers and facilitating mechanisms to development and operation of such teams. | o Students will observe and participate in team-based interprofessional activities in the hospital, clinics, and the community. |
| **Participatory Learning**: Students will practice and demonstrate optimal interprofessional teamwork in the direct and indirect delivery of healthcare. | o Students will participate in health care delivery and community service in the context of interprofessional teams  
 o Students in interprofessional groups will participate in simulation activities and assessments |
| **Innovation Development**: Students will acquire skills to create, implement, and evaluate interprofessional projects aimed at enhancing patient health and wellness. | o Students (building on goals 1-3) will assemble interprofessional teams to design projects that address an unmet need in the healthcare environment |
| **Leadership Building**: Students will be equipped to provide leadership in the formation and work of interprofessional teams including the elimination of barriers to their successful operation. | o Students will adopt leadership roles in both low and high-fidelity simulation activities.  
 o Students (building on goals 1-4) will develop leadership skills as they implement projects that address an unmet need in the healthcare environment |
XII. Faculty Development for synergy Participation

Faculty development is a crucial aspect to the success of our interprofessional education initiative. Effective interprofessional collaboration relies on a shift in attitudes and assumptions acquired in the “traditional” approach to professional training. As the literature indicates, a culture change evolving from ongoing building up and tearing down and building up again of professional roles and identity must occur.

Two major barriers exist to implementing a focus on interprofessional teamwork as part of the training of UTMB students. First, the UTMB faculty, with rare exceptions, were themselves educated in the traditional disciplinary environment. While many clinical units at UTMB have evolved in the direction of effective interdisciplinary teamwork (as described above), many other units, where students will gain some of their important clinical experiences, function in a traditional, hierarchical manner. As the concept of the “hidden curriculum” makes clear, students usually learn much more from what their faculty role models do than from what they say. It will take some time before enough faculty are fully trained in interdisciplinary teamwork methods and concepts to assure that all students uniformly experience this model of patient care as they pursue their clinical training. Implementing the educational interventions of synergy is a part, but only a part, of this faculty development process.

Second, most of our faculty are experts in health care and in the biomedical sciences, but not in the human sciences of human systems development and analysis. This means that even in the clinical units that have well-functioning interdisciplinary teams, the faculty who work there may not be able to explain exactly in what way and for what reasons their team works well. In the clinical units that are struggling with interdisciplinary team-building issues, the faculty may similarly lack the expertise to identify what is missing and determine how to remedy it. A critical element needed for optimal student learning—the ability of the faculty to explain to the students why things are done in a certain way, and what alternative approaches might be considered instead—is therefore usually absent.

Faculty development around synergy is therefore both critically important and also supremely challenging. synergy cannot simply try to teach students more effectively about what is now happening in UTMB’s clinical world. synergy must also seek to change that clinical reality at the same time that new student teaching opportunities are being created. Faculty must be helped to develop new teaching skills, but also new clinical and personnel-management skills and indeed new styles of thinking about their professional lives.

Several approaches to faculty development are proposed – workshops, a Program Selection and Enhancement Process, and an Interprofessional Education Consult Service.

Workshops in Interprofessional Education
We plan to provide faculty development workshops addressing the following four topics:

- What is interprofessional healthcare? Interprofessional education?
- Creating and strengthening interprofessional teams
- Basic teamwork skills, and
- Creating an interprofessional education experience, event, course
These workshops will be offered 1-4 times per year during the first five years of the project. They will be open to all UTMB faculty, but will be emphasized for faculty leaders wishing to participate in the QEP. Faculty members who wish to implement IP enhancements in their existing programs will attend some or all of the half-day workshops. They may be eligible for salary incentive, teaching credit, and/or credit for good institutional citizenship for the purpose of promotion and tenure for their time and effort toward professional development for the purpose of participating in the QEP.

All faculty will be encouraged to complete surveys of knowledge and attitudes as described in the assessment section below. The results of these surveys will be used to update and focus the content of the workshops in order to achieve the intended environment that fosters IP education. The workshops will be offered through the QEP steering committee, but content experts from outside the institution may be invited to present some programs.

**Program Selection and Enhancement as a Faculty Development Activity**

We also anticipate that the synergy program development and evaluation process will serve as a powerful faculty development activity. Faculty members who wish to offer interprofessional educational activities or incorporate enhancements into their existing courses or programs will present their proposals before the synergy steering committee to receive input and feedback prior to approval and implementation. The synergy steering committee will also participate in the ongoing program evaluation along with the responsible faculty members. The proposed model for synergy program selection, enhancement, and assessment is included below in Figure 6.
**Figure 6**

**synergy** Model for Program Selection and Enhancement

1. Programs will be proposed by faculty leaders, student participants, course directors, or members of *synergy* steering committee.
2. Programs will be analyzed for content, quality of interprofessional process, and alignment with the goals of *synergy*.
3. Programs not meeting the content and quality criteria will be returned for further development of concepts and approach.
4. *synergy* Steering Committee will work with program faculty, staff, and students to collect baseline data and plan implementation.
5. Appropriate faculty development will be offered. Students will be prepared for the experience. Program will be implemented.
6. Program and student participants will be assessed with pre-selected specified instruments. Results will be analyzed and compared to baseline data.
7. If Program fails to meet a minimum standard of achieving intended goals then the Program will be withdrawn from *synergy* by the Steering Committee.
8. Programs will undergo further refinements and enhancement based on outcome data.
9. Some Programs may produce such positive results as to inform development of new Programs of a similar nature.

**Example: End-of-life Simulation Activity**

a. The *synergy* steering committee will select the simulation experience on end-of-life care as a setting in which student learning will be enhanced by participation in *synergy*, i.e. by emphasizing interprofessional education. Program faculty leaders will be contacted and invited to participate.

b. Faculty champions for that simulation activity will present the “current state” of the learning experience and address questions such as:
   1. *Up to this point, what have been the intended goals of this program?*
   2. *How do you measure achievement of those goals?*
   3. *What opportunities for innovation or enhancement do you see for this program?*
   4. *How might student learning be enhanced through changes to this activity?*

c. Baseline data on the educational experience of this simulation activity will be collected including assessment of baseline knowledge, skills, attitudes, and behaviors with the instruments in the appendices of this document. Existing baseline data based on previously determined student learning outcomes will also be reviewed and analyzed.

d. *synergy* steering committee will work with program faculty, staff, and interested students to plan meaningful enhancement of learning experiences. Possible enhancement activities might include faculty and student instruction on interprofessional education teams; the inclusion of additional learner groups; the
addition of a problem or challenge that uniquely requires interprofessional teamwork to solve; or a reflective exercise with a debriefing after the simulation activity. The following questions will be jointly addressed:

1. Who will provide these enhancements?
2. How will their workloads change?
3. What specific items or resources do you need to accomplish these enhancements?

e. Appropriate faculty development will be offered. Students will be prepared for the learning experience. All program enhancements will be implemented according to jointly agreed-upon plans.

f. Program and student participants will be assessed with appropriate specified instruments included in the appendices of this document. The Office of Institutional Effectiveness will provide a repository for data and will assist with analysis. The synergy steering committee in conjunction with program faculty will review findings, compare with baseline data, and make recommendations for further refinement. This ongoing assessment process will educate members of the steering committee and will ultimately inform possible improvement of other programs as well.

g. The simulation activity will undergo further enhancement or refinement based on outcome data. If the program is deemed inappropriate for further participation in synergy because of insurmountable challenges, it may be withdrawn by program faculty leaders or by the steering committee.

The Interprofessional Education Support Team for synergy Faculty

Successful implementation of synergy requires significant institutional culture change, adjustment in workflow, and professional development. For these reasons we propose a change management support team for bolstering synergy program leaders in the implementation and achievement of synergy program goals for interprofessional education enhancements. We will assemble a team of faculty members representing each of the schools who have had experience in interprofessional practice and education. The team will include faculty and staff with experience working within interprofessional health care teams, as well as those with expertise in organizational psychology, human systems, and related fields. This team will serve as a resource for evaluation particularly for problem-solving in order to optimize the approach of each of the programs proposed.

UTMB’s successful Ethics Consultation Service and Institutional Ethics Committee may be used as a partial model for the development of the appropriate tools for the synergy support team. The Ethics Consultation Service is led by faculty from the Institute for the Medical Humanities. The membership of the Ethics Committee is designed specifically to emphasize interprofessional representation and effective cross-disciplinary dialogue. The Consultation Service has considerable experience in intervening at the request of clinicians who are having difficulty resolving an ethical problem that has arisen within their clinical unit. What has been labeled an “ethical” problem often turns out, on careful analysis, to be a communications problem—in fact, very often, a breakdown in ideal teamwork. The results of many “ethics” consultations therefore turn out to be for all practical purposes “teamwork building” consultations.

The synergy proposed consultation team service will be loosely modeled after the Institute of Medical Humanities Ethics Consultation Service. This service will be available to all UTMB faculty and staff in an advisory capacity. The anticipated outcome is a heightened awareness of effective interprofessional education teamwork and team-building across UTMB, just as in
the past the Ethics Consultation Service successfully raised awareness regarding the importance of ethical issues in patient care. Especially motivated UTMB students may do elective experiences in which they participate in these teamwork consultations, thus helping to prepare the next generation of faculty champions.
### XIII. Timeline

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Summer 2008 – Summer 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity</strong></td>
<td><strong>Responsible Party</strong></td>
</tr>
<tr>
<td>• Recruit and name <strong>synergy</strong> Leadership.</td>
<td>Council of Deans (COD)</td>
</tr>
<tr>
<td>• Name the <strong>synergy</strong> Steering Committee</td>
<td>COD</td>
</tr>
<tr>
<td>• Assemble and train the Interprofessional Education Consult Committee</td>
<td>Institute for Medical Humanities (IMH) and <strong>synergy</strong> Steering Committee</td>
</tr>
<tr>
<td>• Identify faculty development opportunities by conducting needs assessment surveys.</td>
<td>Office of Institutional Effectiveness (OIE) and <strong>synergy</strong> Director</td>
</tr>
<tr>
<td>• Develop record keeping and process for evaluation of student learning outcomes</td>
<td>OIE and <strong>synergy</strong> Director</td>
</tr>
<tr>
<td>• Pilot interprofessional experiences that incorporate the goals of knowledge, observation, and participation across the following: small group activities and practice and service learning activities. Select one existing interprofessional education program from each activity category for pilot enhancement, one interprofessional team, one problem based learning (PBL) case, one team learning case.</td>
<td>Program faculty and <strong>synergy</strong> Steering Committee</td>
</tr>
<tr>
<td>• Pilot assessment process for evaluating student learning across interprofessional experiences.</td>
<td>OIE and <strong>synergy</strong> Director</td>
</tr>
<tr>
<td>Year 2</td>
<td>Activity</td>
</tr>
<tr>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>Summer 2009 – Summer 2010</td>
<td>• Implement faculty development by offering 4 half-day workshops and through the program selection and enhancement process and the Interprofessional Education Consultation Service.</td>
</tr>
<tr>
<td></td>
<td>• Review pilot assessment results.</td>
</tr>
<tr>
<td></td>
<td>• Provide faculty and the synergy steering committee with assessment feedback.</td>
</tr>
<tr>
<td></td>
<td>• Pilot inter-professional experiences that incorporate the goals of knowledge, observation, and participation across the following: small group activities, practice and service learning activities, and simulations. Select one existing interprofessional education (IPE) program from each activity category for pilot enhancement (one IP team, one PBL case, one team learning case) incorporating additional learner groups.</td>
</tr>
<tr>
<td></td>
<td>• Implement first round of assessment activities.</td>
</tr>
<tr>
<td>Year 3</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>Summer 2010 – Summer 2011</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>Responsible Party</td>
</tr>
<tr>
<td>• Continue faculty development by offering 8 half-day workshops and through the program selection and enhancement process and the Interprofessional Education Consultation Service. Revisions to workshops, enhancement process, and consult service will reflect assessment results as described below.</td>
<td>synergy Director and Steering Committee</td>
</tr>
<tr>
<td>• Review and use of assessment results for program improvement</td>
<td>OIE, synergy Director and Steering Committee</td>
</tr>
<tr>
<td>• Provide steering committee with assessment feedback.</td>
<td>OIE and synergy Director</td>
</tr>
<tr>
<td>• Provide faculty with assessment feedback and recommendations</td>
<td>OIE, synergy Director and Steering Committee</td>
</tr>
<tr>
<td>• Develop pathways for graduate student involvement in IPE.</td>
<td>Program faculty and synergy Steering Committee</td>
</tr>
<tr>
<td>• Pilot inter-professional experiences that incorporate the goals of knowledge, observation, and participation across the following: small group activities, practice and service learning activities, and simulations. Select one additional existing interprofessional education (IPE) program from each activity category for pilot enhancement (one IP team, one PBL case, one team learning case, and one simulation activity) incorporating additional learner groups.</td>
<td>Program faculty and synergy Steering Committee</td>
</tr>
<tr>
<td>• Second round of assessment activities.</td>
<td>OIE and synergy Director</td>
</tr>
</tbody>
</table>
### Synergy: A Quality Enhancement Plan

#### XIII. Timeline

<table>
<thead>
<tr>
<th>Year 4</th>
<th>Activity</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer 2011 – Summer 2012</td>
<td>• Continue faculty development by offering 8 half-day workshops and through the program selection and enhancement process and the Interprofessional Education Consultation Service. Ongoing revisions to workshops, enhancement process, and consult service will reflect assessment results as described below.</td>
<td>Synergy Director and Steering Committee, IMH</td>
</tr>
<tr>
<td></td>
<td>• Pilot interprofessional experiences that incorporate the goals of knowledge, observation, participation, leadership and innovation across the following: small group activities, practice and service learning activities, simulations, and projects. Select one additional existing interprofessional education (IPE) program or create one new program from each activity category (one IP team, one PBL case, one team learning case, one simulation activity, and one IP student group project) incorporating additional learner groups.</td>
<td>Program faculty and synergy Steering Committee</td>
</tr>
<tr>
<td></td>
<td>• Provide QEP Steering Committee with assessment feedback.</td>
<td>OIE and synergy Director</td>
</tr>
<tr>
<td></td>
<td>• Provide faculty with assessment feedback and recommendations.</td>
<td>OIE, synergy Director and Steering Committee</td>
</tr>
<tr>
<td></td>
<td>• Review and use of assessment results for program improvement</td>
<td>OIE, synergy Director and Steering Committee</td>
</tr>
<tr>
<td></td>
<td>• Implement comprehensive assessment of IPE activities</td>
<td>OIE, synergy Director and Steering Committee</td>
</tr>
<tr>
<td></td>
<td>• Review of completed projects and selection of projects for implementation.</td>
<td>OIE, synergy Director and Steering Committee</td>
</tr>
<tr>
<td>Year 5</td>
<td>Activity</td>
<td>Responsible Party</td>
</tr>
<tr>
<td>--------</td>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Summer 2012 – Summer 2013</td>
<td>• Continue faculty development by offering 4 half-day workshops and through the program selection and enhancement process and the Interprofessional Education Consultation Service. Ongoing revisions to workshops, enhancement process, and consult service will reflect assessment results as described below.</td>
<td>synergy Director and Steering Committee, IMH</td>
</tr>
<tr>
<td></td>
<td>• Pilot inter-professional experiences that incorporate the goals of knowledge, observation, participation, leadership and innovation across the following activities: small group activities, practice and service learning activities, simulations, and projects. Select one additional existing interprofessional education (IPE) program or create one new program from each activity category (one IP team, one PBL case, one team learning case, one simulation activity, and one IP student group project) incorporating additional learner groups.</td>
<td>Program faculty and synergy Steering Committee</td>
</tr>
<tr>
<td></td>
<td>• Provide synergy steering Committee with assessment feedback.</td>
<td>OIE and synergy Director</td>
</tr>
<tr>
<td></td>
<td>• Provide faculty with assessment feedback and recommendations.</td>
<td>OIE, synergy Director and Steering Committee</td>
</tr>
<tr>
<td></td>
<td>• Review and use of assessment results for program improvement</td>
<td>OIE, synergy Director and Steering Committee</td>
</tr>
<tr>
<td></td>
<td>• Five year report due to SACS / COC</td>
<td>OIE, synergy Director and Steering Committee</td>
</tr>
</tbody>
</table>
Interprofessional education is expected to become an educational way of life at UTMB. We look forward to learning a great deal as we set forth on this journey. Building and expanding our existing interprofessional ventures and creating new ones require an organizational structure that can be modified in concert with progress of interprofessional education. Figure 7 shows the organizational configuration we believe suits our current stage of development.

As shown in the Organizational Chart, overall responsibility for synergy rests with the Chief Academic Officer, who will carry out this responsibility with input from the Council of Deans. Constituting, the principal academic decision making body for the university, the Council of Deans is comprised of the Deans of the four UTMB schools.

Further advice and counsel will be provided to the Chief Academic Officer by a synergy Advisory Council. Council membership will include the UTMB Deans, the synergy Director, the Office of Institutional Effectiveness Director who heads the Assessment Team, the Associate Vice President for University Advancement, other key executive UTMB leaders, two Galveston community representatives, two student representatives, the Chair of the Faculty Senate, two faculty representatives, and two staff representatives.

The purpose of the synergy council will be to ensure the advancement and integration of synergy at UTMB. The council will also advise regarding issues related to the acquisition of resources for synergy; and will serve in a supportive role to the synergy director.
**synergy** Director. The newly created position of **synergy** Director will be filled by an experienced doctoral prepared individual who will report to the Chief Academic Officer. The position description for the director appears in Appendix B. Responsibility for **synergy** implementation and daily operations will rest with the director, who will chair the **synergy** steering committee.

**synergy** Steering Committee. Invitations to serve on the steering committee will be extended to faculty who served on the **synergy** Planning Committee. The committee will also include members drawn from the UTMB faculty and student bodies; as well as **synergy** coordinators. The purpose of the committee is to facilitate the implementation of **synergy** by supporting the director in a myriad of ways. For example, offering guidance in the bringing together of key participants, engaging UTMB faculty and students, enhancing communication, solving logistical problems, providing direction, trouble shooting, thinking strategically, and promoting **synergy** integration in general.

**synergy** Assessment Team. Led by the Office of Institutional Effectiveness Director, the **synergy** Assessment Team will work closely with the **synergy** Director and the Steering Committee to ensure that all aspects of program evaluation and ongoing program improvement occur as planned. The assessment team will include interprofessional representation. The School of Medicine Office of Education Development will be an important part of the assessment team. The Institutional Education Effectiveness Committee will also work closely with the team to ensure that **synergy** assessment becomes integrated into all aspects of UTMB program assessment.

**Faculty / Students Participants Group.** As **synergy** evolves, numerous faculty and students will be active participants in **synergy** activities. At the outset faculty responsibilities and expectations of students will less defined. Therefore early stage faculty and student participants are likely to benefit from an opportunity to meet periodically as a group and exchange **synergy** related ideas and experiences. While this will be an informal group, it is likely that it will serve a useful supportive function for participants. As **synergy** becomes more integrated into UTMB life need for the group may diminish markedly or the group may develop into a more formal part of **synergy**.

**synergy** Coordinators. Four coordinators will staff the initial introduction of **synergy** at UTMB. These individuals will play major roles in setting up the various **synergy** learning activities for students and generally paving the way for **synergy** to become a well established part of life at UTMB. The coordinators will report to the **synergy** director and serve as ex officio members of the steering committee.
XV. Fiscal Resources for synergy

Table 4

synergy Anticipated Budget

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries of Key Personnel¹</td>
<td>$49,916</td>
<td>$199,665</td>
<td>$207,651</td>
<td>$219,957</td>
<td>$224,595</td>
<td>$229,087</td>
</tr>
<tr>
<td>Staff Support²</td>
<td>11,388</td>
<td>45,522</td>
<td>47,374</td>
<td>49,269</td>
<td>51,240</td>
<td>52,265</td>
</tr>
<tr>
<td>Faculty Development</td>
<td>24,000</td>
<td>60,000</td>
<td>72,000</td>
<td>72,000</td>
<td>62,000</td>
<td>48,000</td>
</tr>
<tr>
<td>Faculty Participation Support</td>
<td>0</td>
<td>100,000</td>
<td>125,000</td>
<td>125,000</td>
<td>125,000</td>
<td>125,000</td>
</tr>
<tr>
<td>Travel, Conferences, Workshops</td>
<td>4,800</td>
<td>15,000</td>
<td>15,000</td>
<td>15,000</td>
<td>15,000</td>
<td>15,000</td>
</tr>
<tr>
<td>synergy Assessment³</td>
<td>3,000</td>
<td>7,500</td>
<td>15,000</td>
<td>15,000</td>
<td>7,500</td>
<td>5,000</td>
</tr>
<tr>
<td>synergy Supplies⁴</td>
<td>1,500</td>
<td>4,000</td>
<td>6,000</td>
<td>7,500</td>
<td>7,500</td>
<td>7,500</td>
</tr>
<tr>
<td>Services and Other Monthly Charges⁵</td>
<td>2,500</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
<td>5,000</td>
</tr>
<tr>
<td>Start-up Costs⁶</td>
<td>4,000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>synergy Marketing and Public Relations</td>
<td>10,000</td>
<td>2,500</td>
<td>2,500</td>
<td>2,500</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Total</td>
<td>$111,104</td>
<td>$439,187</td>
<td>$496,525</td>
<td>$511,226</td>
<td>$499,835</td>
<td>$488,852</td>
</tr>
</tbody>
</table>

*FY2008 covers May1-August31.
1. Includes synergy Director, Fiscal Affairs Officer, Education Specialist, and Coordinators
2. Includes Administrative Manager, Administrative Coordinator, and Technical Manager
3. Includes acquisition of measurement instruments and software maintenance and upgrades
4. Includes lab consumables, telecommunication connection charges, materials production
5. Includes telephone and network charges
6. Includes work station for Director

The budget shown in Table 4 is intended to provide evidence of The University of Texas Medical Branch at Galveston’s (UTMB) commitment to provide sufficient resources to support synergy. In concert with SACS COC expectations, the budget covers a five year period. As with all UTMB endeavors, we will apply fiscal prudence to the implementation of synergy. To the extent possible we will draw on existing resources and will shift resources to sustain synergy over time. We have allocated a modest amount of new annual baseline funding for the five year period, with the expectation that the need for additional resources will be examined with every new UTMB fiscal year budgeting cycle. Recognizing the benefits to be derived from enrichment, we plan active external fundraising for synergy. Using the resources of the highly supportive UTMB Office of University Advancement, we will concentrate our efforts on a general endowment for synergy as well as funds for enhancing and expanding our simulated learning environment including equipment and training.
activities. UTMB recently completed a comprehensive capital campaign in which gifts to buttress our education mission exceeded our goals. Hence we expect to experience enviable success in fundraising for synergy. For example, we received a large gift to support an Innovation in Education Initiative. The project resulted in the creation of a Simulated Learning Center. Similarly, knowing the critical nature of faculty development we plan for promote the use of an internal funding source known as President’s Cabinet Awards funding for Faculty Development Grants. In addition, the Academy of Master Teachers will provide one faculty grant per year. We will also seek faculty development funding via the University of Texas (UT) System’s various funding mechanisms aimed at education innovations and faculty advancement; and avail ourselves of state and federal grant opportunities.

Lastly, we anticipate instituting an interprofessional education student fee. We plan to propose this fee in year three. At UTMB all student tuition increases and new student fees require initial approval by a Student Committee. By year three enough students will have participated in synergy, increasing the likelihood of support for a reasonable student fee. If we are not successful gaining approval for a student fee we will not be deterred. Instead we will continue to support synergy via UTMB internal support along with the other mechanisms stated earlier.

**Budget Explanation**

**Qualified Personnel:** The percent of effort shown for each staff position represents our best estimate at this time. Accordingly the budget in Table 4 shows our best estimate of UTMB personnel costs. Drawing on experiences of other SACS COC institutions, we recognize that the eventual staff needs may exceed initial approximations. Yet we are well positioned to launch synergy. Much of our challenge will be to uncover our many UTMB existing resources and apply them to synergy, a task to which we are presently devoting considerable energy. The Chief Academic Officer (CAO) to whom the synergy leadership reports is a member of the UTMB Executive Leadership Committee and the UTMB Strategic Executive Committee and is therefore appropriately placed to insure synergy receives the necessary financial and human resources needed for successful outcomes. (An Organizational Chart for synergy appears earlier in this document.)

**Staff:** A perusal of the list below reveals that, an array of qualified UTMB employees will participate in synergy. Over time we expect the percent of effort required of selected individuals will increase. For some roles, the need will diminish with the full educational integration of synergy. While drawing on UTMB existing resources was initially based on financial constraints we have come to know the enormous value of institution wide ownership of synergy. UTMB staff interest in synergy participation has been enthusiastic and welcomed. Staff resumes will be available for review at the time of the onsite visit.

- **synergy Director** (1 FTE): New funding has been allocated to hire a full-time doctoral prepared individual providing leadership for synergy. This person will report to the Chief Academic Officer. A position description is included in Appendix B.

- **Administrative Manager** (.25 FTE): Currently employed in the Office of the Chief Academic Officer, the administrative manager will provide 25% effort to synergy Operations.

- **Education Specialist** (.25 FTE): Located in the Office of Institutional Effectiveness, this individual will assume responsibility for supporting synergy learning activities and participating as a member of the synergy assessment team.
Technical Support Manager (.20 FTE): Situated in the UTMB Office of Information Technology, this person will oversee the technology support needed to effectively carry out all synergy activities.

Simulation Learning Coordinator (.20 FTE): Presently employed by the School Of Medicine, this individual will coordinate our synergy simulated learning activities. Responsibilities will include case development, hiring standardized patients, and procurement of supplies.

Clinical Preceptors Coordinator (.20 FTE): Serving as the Director of Student Wellness, this MBA prepared nurse will launch the preceptor arrangements for interprofessional education clinical experiences. In so doing she will work closely with the synergy Steering Committee. At the present time UTMB’s clinical affiliation agreements number over 1,000. Many of these are well suited for interprofessional education experiences.

Learning Resources Coordinator (.20 FTE): Now actively involved in university wide learning resources activities in Moody Medical Library, this individual will work closely with the QEP Director in the interest of providing appropriate synergy related learning resources including distance education tutorials, case generation, and electronic portfolio development.

Administrative Assistance (.20 FTE): Additional administrative assistance support will be provided by the Academy Of Master Teachers.

Fiscal Affairs Officer: The individual who presently serves as the Chief Financial Officer for the Chief Academic Officer will also assume responsibility for synergy.

Marketing and Public Relations: UTMB offices of marketing and public relations will work closely with the synergy Steering Committee to promote and sustain active university wide involvement with synergy.

Faculty Salary Support
The Deans of each of the four schools have agreed to provide faculty as needed to support the implementation of synergy. In some instances faculty will simply incorporate interprofessional education concepts into existing courses. Other synergy activities will require more extensive development necessitating faculty release time. Estimates of synergy expenses appear in the budget in Table 4. For all synergy expenses we are cognizant of the imprecision associated with such estimates. Hence we do not purport to have exact matching of faculty costs with the budget expenses proposed. Inherent in the schools’ agreement to support synergy is the recognition that successful engagement of faculty is contingent on the provision of ample support mechanisms. The UTMB schools will bear the expense of any additional part-time faculty or other strategies that may be needed to cover the release time provided to faculty engaged in synergy activities.

Faculty Development / Enrichment
UTMB will provide the resources necessary for faculty development in the areas of: general educator skills, problem based learning, interprofessional education, teamwork, simulated learning, patient safety, cultural competence, distance education, and on-line and web-assisted course delivery modalities. The estimated cost for faculty development is shown in Table 4. Ongoing assessment of faculty enrichment needs, together with the evaluation of faculty development programs, will ensure that relevant and timely faculty development activities are an integral part of synergy implementation. At the present time we are planning to conduct faculty development workshops at various intervals. In addition we expect to draw
on the expertise of consultants. In some cases we plan to combine these activities by bringing a consultant to campus that will provide individual consultations and also conduct faculty group workshop type activities. Our faculty development efforts are intended to enhance learning outcomes by providing skilled faculty for all components of UTMB professional education.

Travel to selected conferences will also constitute faculty development activity (Table 4). As noted earlier, we expect to augment faculty development via the provision of competitive Faculty Grants from the UTMB President’s Cabinet Awards program. These awards will enable faculty to work individually or on teams on selected interprofessional projects. The UTMB Academy of Master Teachers has also indicated a willingness to provide faculty development resources.

We also plan to take advantage of grant opportunities to support workshop activities. The cost estimate for faculty development including travel, consultants and workshops appears in the Table 4.

**Space, Equipment, and Software**

UTMB has enjoyed generous University of Texas System funding for space renovation, equipment and software. The Permanent University Fund’s Library Equipment Repaid and Rehabilitation Fund (known as PUF LERR) is one such source. Another funding source is the Enriching Nursing through Exceptional Recruitment (ENTER) grant program. This year the School of Nursing, School of Allied Health Sciences, and School of Medicine all received generous funds to support simulation learning and other forms of education technology. The ENTER program provided the School of Nursing with $1.5 million for simulation learning, health promotion activities, and research and scholarship centers renovations. All three multifunctional areas are appropriate for synergy activities.

Overall, UTMB has a wealth of space available for immediate use for synergy. In addition there are plans to continue to expand space for use with simulated learning. A variety of interprofessional education facilities are available through the School of Medicine (SOM). An impressive area for simulated learning was established as part of a fund raising effort to advance simulated learning in SOM. The Oliver Patient Safety Center was created because of a benefactor’s interest in patient safety and interprofessional education. Though currently a virtual center, we expect to obtain additional funding to create an actual center. As noted above, education will emerge as a major fundraising focus as we embark on the implementation of synergy with a university wide commitment to interprofessional education.

Information Technology (IT) will be an integral part of synergy. The UTMB Advisory Council on Information Technology will work closely with the synergy Steering Committee to insure the appropriate software and other technologic tools are available for synergy.
XVI. synergy Assessment Plan

In order to determine synergy success in enhancing student learning, multiple approaches to assessment will be used. In addition to the traditional satisfaction surveys, we plan on assessing change in knowledge and skills using a before / after approach with questionnaires, interviews, analysis of reflective diaries, and examination questions. We will assess for changes in attitude reflected in changes in behavior through observation and audits. The assessment plan will evolve and develop as the program grows as described in the timeline. Draft examples of the specific instruments to be used are referenced in the following tables and included in the appendices. Selection of appropriate instruments will be determined by the steering committee in collaboration with the program directors / planners. Revisions to the instruments will be made by the steering committee in response to analysis and review of the data collected throughout the project. We are ultimately committed to a longitudinal assessment of culture change with resultant enrichment of student learning, enhancement of service to patients, improvement in clinical outcomes, and optimization of workplace morale.

Ongoing program improvement measures will be established and implemented in the first two years of the project. Assessment costs are included in the budget in Table 4 above. Assessments will be conducted yearly as described on the timeline.

Project faculty will be responsible for reviewing and evaluating survey data, reflective writings, and student performance in specific activities to ensure that students have achieved a minimum standard of competence. This data will be reviewed by the synergy steering committee quarterly. Formal program assessment will be conducted annually as described on the timeline.

The Office of Institutional Effectiveness will provide a repository for student portfolios and the assessment data that is collected. The synergy director will provide ongoing oversight of synergy progress. The director will review student learning outcome data and program assessment data monthly. The synergy steering committee will review program data annually and as deemed necessary by the synergy director.
Table 5

Goal-related synergy Outcome Measures

<table>
<thead>
<tr>
<th>Goals</th>
<th>Anticipated Outcome Measures</th>
</tr>
</thead>
</table>
| **Knowledge Acquisition**: Students will demonstrate understanding of the knowledge, skills, and roles of healthcare disciplines. | o  Items that test knowledge and application of knowledge regarding professional roles and teamwork will be added to existing written and clinical skills examinations.  
   o  Students will conduct self-assessments of knowledge, attitudes, and skills in interprofessional teamwork and professional roles. |
| **Observational Learning**: Students will observe interprofessional teamwork and identify barriers and facilitating mechanisms to development and operation of such teams. | o  Assessments of clinical performance in interprofessional health care delivery will be completed by supervising faculty.  
   o  Students will submit reflective writings after interprofessional educational experiences. |
| **Participatory Learning**: Students will practice and demonstrate optimal interprofessional teamwork in the direct and indirect delivery of healthcare. | o  Students will be evaluated on their interprofessional team work in problem-based learning and team learning as well as clinical performance.  
   o  Students will complete attitude surveys following participation in interprofessional activities. |
| **Innovation Development**: Students will acquire skills to create, implement, and evaluate interprofessional projects aimed at enhancing patient health and wellness. | o  The quality and potential impact of projects proposed by interprofessional student groups will be evaluated. |
| **Leadership Building**: Students will be equipped to provide leadership in the formation and work of interprofessional teams including the elimination of barriers to success. | o  Students will conduct self-assessment and peer evaluation reflecting interprofessional teamwork.  
   o  Project outcomes will be assessed in the context of the intended goals. |
### Table 6

**synergy Activity-related Assessment and Use of Results**

<table>
<thead>
<tr>
<th>Experience</th>
<th>Learning Objectives</th>
<th>Measurement and Criteria</th>
<th>Use of Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Group Learning</td>
<td>o Describe own professional role</td>
<td>o Written examinations</td>
<td>Results will be used to assess student learning and to plan programmatic improvements</td>
</tr>
<tr>
<td></td>
<td>o Describe roles of other healthcare professionals in specific and varied contexts</td>
<td>o Behavioral and performance components assessed by faculty</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o Describe mechanisms that enable or hinder each team member’s effectiveness as part of a healthcare team</td>
<td>o Experience debriefings through Focus Groups</td>
<td></td>
</tr>
<tr>
<td>Practice and Service Learning Activities in Interprofessional Education</td>
<td>o Learning objectives are formalized for each specific activity before the activity is initiated</td>
<td>o Measures are defined specific to the learning objective and specific context</td>
<td>Results will be used to assess student learning, evaluate appropriateness and effectiveness of specific activities, and to plan programmatic improvements</td>
</tr>
<tr>
<td>Simulation-based Activities in Interprofessional Education</td>
<td>o Learning objectives are formalized for specific simulation settings and activities</td>
<td>o Measures are defined specific to the simulation activity</td>
<td>Results will be used to assess student learning, evaluate the efficacy of the simulation activity, and to plan programmatic improvements</td>
</tr>
<tr>
<td>Clinical Projects in Interprofessional Education</td>
<td>o Goals of project will be structured as a research study or clinical investigation</td>
<td>o Success of the project will be judged empirically</td>
<td>Results will be used to evaluate student competency in an interprofessional team setting and impact of project on the healthcare environment</td>
</tr>
<tr>
<td></td>
<td>o Learning outcomes will be assessed by faculty mentors</td>
<td>o Experience debriefing through Focus Groups</td>
<td></td>
</tr>
</tbody>
</table>
### Table 7

**synergy Evaluation, Instruments, and Use of Results**

<table>
<thead>
<tr>
<th>Focus</th>
<th>Outputs</th>
<th>Instruments</th>
<th>Use of Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrative</td>
<td>o Number and types of students participating</td>
<td>o Data Collection tools</td>
<td>o Ensure all stakeholders are reached</td>
</tr>
<tr>
<td></td>
<td>o Number and types of activities developed annually</td>
<td></td>
<td>o Promote enhancement of all activities</td>
</tr>
<tr>
<td></td>
<td>o Number of activities enhanced annually</td>
<td></td>
<td>o Track progress of synergy</td>
</tr>
<tr>
<td></td>
<td>o Number and types of faculty development activities</td>
<td></td>
<td>o Assess faculty development efforts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>o Measure alignment of faculty development activities with synergy goals</td>
</tr>
<tr>
<td>Student</td>
<td>o Satisfaction with learning exercise</td>
<td>o Survey</td>
<td>o Identify opportunities to improve approach to activities</td>
</tr>
<tr>
<td></td>
<td>o Satisfaction with individual assessments</td>
<td>o Focus Groups</td>
<td>o Measure efficacy of assessment strategies</td>
</tr>
<tr>
<td></td>
<td>o Satisfaction with collaborative experiences</td>
<td>o Self-assessment</td>
<td>o Evaluate activity implementation</td>
</tr>
<tr>
<td>Faculty</td>
<td>o Needs Assessment</td>
<td>o Peer evaluation</td>
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<td></td>
<td>o Satisfaction with Faculty Development</td>
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<tr>
<td></td>
<td>o Self-assessment</td>
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<tr>
<td></td>
<td>o Faculty perception of effectiveness of learning</td>
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<tr>
<td></td>
<td>o Faculty perception of assessment</td>
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<tr>
<td>Institutional</td>
<td>o Post-graduate assessment of impact of interprofessional education</td>
<td>o Survey of knowledge and attitudes</td>
<td>o Guidance for faculty development activities</td>
</tr>
<tr>
<td>Cultures</td>
<td>o Measure of changes in student attitudes toward interprofessional practice</td>
<td></td>
<td>o Assess efficacy of implementation strategies</td>
</tr>
<tr>
<td></td>
<td>o Measure of changes in student collaborative skills</td>
<td></td>
<td>o Enhancement of assessment strategies</td>
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<td></td>
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<td></td>
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<td></td>
<td>o Development of new or improved strategies toward implementation</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>o Enhancement of approaches to activities</td>
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<tr>
<td></td>
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<td></td>
<td>o Enhancement of mentoring / role-modeling</td>
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</table>
In this document we have presented UTMB’s best thinking regarding the meaningful enhancement of the student learning environment. From the beginning of the quest for a worthwhile quality enhancement focal point to the completion of this document we have been steadfast in the effort to engage the university community. While there has been considerable interest, participation and support, we recognize the challenges that are before us.

Perhaps foremost among our challenges is the university-wide culture change necessary to make interprofessional education a UTMB way of life. To date we have drawn on the literature to learn from our colleagues which strategies have been successful in addressing culture change. In turn we will be creating a UTMB specific plan to address culture change. The plan will be implemented conterminously with synergy student activities. Inherent in this approach is the recognition that UTMB leadership and faculty must role model the behaviors to be fostered in UTMB students. We are expecting our students to exhibit behaviors characteristic of change agents who act as leaders for changing practice to make it more collaborative. Therefore no less can be expected of UTMB leadership and faculty.

Logistical challenges are also before us as we endeavor to create a plan to include, over time, all UTMB students in synergy. Addressing logistics will be one of the first issues faced by the synergy Director in conjunction with the Steering Committee.

The acquisition of fiscal resources will be an ongoing challenge as we advance synergy. Yet UTMB is committed to providing the resources needed for synergy to succeed and become a permanent part of UTMB.

While the creation of synergy began because of a SACS COC requirement, we have found the experience to be positive and rewarding. New vistas opened for us as we came to know and work with previously unknown UTMB colleagues and students. Similarly as we enumerated established UTMB interprofessional activities it was gratifying to realize how much UTMB had already accomplished. This realization gave us new energy to move forward with synergy. Now as we are poised to make synergy a reality, we do so with enthusiasm and a readiness to successfully address challenges, overcome barriers, and problem solve with alacrity.
XVIII. References


Critical Care Medicine 34: 211-218.


# Appendices

## Appendix A. QEP Leadership Groups

### 1. List of Quality Enhancement Plan Study Group Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>John D. Bauer, MD</td>
<td>Assistant Professor of Surgery</td>
<td>Division of Plastic Surgery</td>
</tr>
<tr>
<td>Patricia S. Beach, MD</td>
<td>Professor of Pediatrics</td>
<td>School of Medicine</td>
</tr>
<tr>
<td>Henry J. Cavazos, JD</td>
<td>Associate Professor of Humanities and Basic Sciences</td>
<td>Associate Dean for Academic Affairs</td>
</tr>
<tr>
<td>Cary W. Cooper, PhD</td>
<td>Professor of Pharmacology and Toxicology</td>
<td>School of Medicine</td>
</tr>
<tr>
<td>Ann W. Frye, PhD</td>
<td>Associate Professor of Internal Medicine</td>
<td>School of Medicine</td>
</tr>
<tr>
<td>Susan Gerik, MD</td>
<td>Associate Professor of Pediatrics</td>
<td>School of Medicine</td>
</tr>
<tr>
<td>Caroline W. Jansen, PT, PhD</td>
<td>Associate Professor of Physical Therapy</td>
<td>School of Allied Health Sciences</td>
</tr>
<tr>
<td>Helen Jordan, RN, EdD</td>
<td>Assistant Professor of Nursing</td>
<td>School of Nursing</td>
</tr>
<tr>
<td>Steve Lieberman, MD</td>
<td>Professor of Internal Medicine</td>
<td>Vice Dean for Academic Affairs</td>
</tr>
<tr>
<td>Alice Anne O’Donell, MD</td>
<td>Professor of Pediatrics and Family Medicine</td>
<td>Director of Predoctoral Education and Faculty Development</td>
</tr>
</tbody>
</table>

The University of Texas Medical Branch at Galveston
### 2. List of synergy Development Committee Members

**July 2007 - February 2008**

| John D. Bauer, MD,  |
| Assistant Professor of Surgery  |
| Division of Plastic Surgery  |
| School of Medicine  |
| Patricia S. Beach, MD  |
| Professor of Pediatrics  |
| School of Medicine  |
| Howard Brody, MD, PhD  |
| Professor of Family Medicine  |
| John P. McGovern Centennial Chair  |
| School of Medicine  |
| Director, The Institute for the Medical Humanities  |
| Henry J. Cavazos, JD  |
| Associate Professor of Humanities and Basic Sciences  |
| Associate Dean for Academic Affairs  |
| School of Allied Health Sciences  |
| Anna Collins  |
| Master’s Degree Student  |
| School of Allied Health Science  |
| Cary W. Cooper, PhD  |
| Professor of Pharmacology and Toxicology  |
| School of Medicine  |
| Dean, Graduate School of Biomedical Sciences  |
| Ann W. Frye, PhD  |
| Associate Professor of Internal Medicine  |
| School of Medicine  |
| Director, Office of Educational Development  |
| Susan Gerik, MD  |
| Associate Professor of Pediatrics  |
| School of Medicine  |
| Margaret Grinslade, R.N., PhD  |
| Assistant Professor of Nursing  |
| Program Director, Baccalaureate Nursing Program  |
| School of Nursing  |
| Loretta Grumbles, MD  |
| Assistant Professor of Internal Medicine  |
| School of Medicine  |
| Ruth Levine, MD, FAPA  |
| Professor of Clinical Psychiatry and Internal Medicine  |
| Director, Undergraduate Education  |
| School of Medicine  |
| Director, Academy of Master Teachers  |
| Steve Lieberman, MD  |
| Professor of Internal Medicine  |
| Vice Dean for Academic Affairs  |
| School of Medicine  |
| Kathleen Lucke, RN, PhD  |
| Associate Professor of Nursing  |
| Florence Thelma Hall Distinguished Professorship in Nursing  |
| Associate Dean for Academic Affairs  |
| School of Nursing  |
| John Luk, MD, FAAP  |
| Clinical Assistant Professor of Pediatrics  |
| Assistant Dean for Regional Medical Education  |
| Pediatric Hospitalist, Children’s Hospital of Austin  |
| Director, Austin Pediatrics Clerkship  |
| School of Medicine  |
2. List of synergy Development Committee Members (continued)

<table>
<thead>
<tr>
<th>Name</th>
<th>Title and Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lodie Massey, MA, PA</td>
<td>Coordinator of Special Programs, School of Allied Health Sciences</td>
</tr>
<tr>
<td>John C. McKee, PhD</td>
<td>Assistant Professor of Preventive Medicine and Community Health, School of Medicine, Director, Office of Institutional Effectiveness</td>
</tr>
<tr>
<td>Kathleen Nash, RNC, PhD</td>
<td>Associate Professor of Nursing, Coordinator, Nurse Practitioner Program, School of Nursing</td>
</tr>
<tr>
<td>Diane Reed, SW, LCSW, ACSW</td>
<td>Social Work Supervisor in Geriatric Services, Team Leader, Care Management</td>
</tr>
<tr>
<td>Kay Sandor, RN, PhD</td>
<td>Associate Professor of Nursing, School of Nursing</td>
</tr>
<tr>
<td>Mark Shen, MD</td>
<td>Associate Professor of Pediatrics, School of Medicine</td>
</tr>
<tr>
<td>T.S. Shomaker, MD</td>
<td>Professor of Anesthesiology, Dean of Austin Medical Program, School of Medicine</td>
</tr>
<tr>
<td>Gretchen Stone, PhD, OTR, FAOTR</td>
<td>Associate Professor of Occupational Therapy, Robert K. Bing Distinguished Professor, Chair, Department of Occupational Therapy, School of Allied Health Science</td>
</tr>
<tr>
<td>Hien Tran</td>
<td>Undergraduate, School of Allied Health Science</td>
</tr>
<tr>
<td>Sarah Wakefield</td>
<td>Medical Student, 4th Year, School of Medicine</td>
</tr>
<tr>
<td>Cissy Yoes</td>
<td>Director of Knowledge Management and Data Resources</td>
</tr>
<tr>
<td>Ex Officio Member</td>
<td></td>
</tr>
</tbody>
</table>

The University of Texas Medical Branch at Galveston
Appendix B. Position Description: UTMB synergy Director

Summary of Position Responsibilities:
Reporting to the Chief Academic Officer the Director for the Quality Enhancement Plan, the synergy Director will oversee and provide leadership for the ongoing development and implementation of the UTMB institution wide interprofessional education initiative. The synergy Director will administer all activities for the QEP implementation and further development, assure ongoing communication occurs with all component groups involved with the plan, be a spokesperson for the initiative, and assume responsibility for assuring the assessment, budgetary, and reporting requirements are met.

Job Duties:
1. Develop and implement a strategy for informing all involved constituents about synergy through regular meetings with the synergy Steering Committee, opinion leaders, university faculty, staff, students, university administration and the external community.
2. Working with the synergy Steering Committee, administer the activities of all of the synergy work groups, consultants, trainers, and other key leadership as required.
3. Chair the synergy Steering Committee and serve as a liaison to other university committees and groups with related interests.
4. Work collaboratively as a member of the synergy Steering Committee providing reports and updates as requested and implementing changes as approved.
5. Work with the synergy CFO to assure proper management and accountability of the synergy budget.
6. Work with the Chief Academic Officer to assure adequate funding and resources for synergy.
7. Prepare regular reports on the progress and outcomes of synergy for internal review and to meet the requirements of SACS.
8. Assure the dissemination of the findings and outcomes of synergy through scholarly publications and attendance and presentations at professional organizational meetings.

Job Qualifications:
The position requires an earned doctorate and experience in academic administration in a graduate level health professions university. A record of scholarly activity and demonstrated leadership in health professions is necessary. Excellent communication and team skills, an understanding of and ability to work with multiple professional groups is required.
Appendix C. Brief History of UTMB

The University of Texas Medical Branch at Galveston was founded in 1881, when the Texas Legislature authorized the establishment of a main campus for a state university and a medical school component. In a statewide referendum, Texas citizens selected Austin for the main university and Galveston, a leading commercial center and public health station, for the Medical Department.

The Medical Department's first session opened on October 5, 1891, with 23 students and 13 faculty members. The campus consisted of two main buildings: the John Sealy Hospital built in 1890 and the Medical Department Building, completed in 1891. The hospital was the result of a $50,000 bequest in the will of Galveston businessman John Sealy. The Medical Department Building, having survived the devastating Galveston hurricane of 1900 and all natural calamities since that time, is still in use and is affectionately known as "Old Red."

In 1919, the name of the campus was changed to the Medical Branch. The campus has grown from two buildings to more than 70. The original 23 students are now over 2,500, including interns, residents, and fellows. Thirteen faculty members have grown to over 1,000. And the original medical school has been joined by schools of nursing, allied health, and a graduate school in biomedical sciences.

By 1922, the Sealy fortune that financed the original hospital had coalesced into The Sealy & Smith Foundation. That philanthropic enterprise was founded with a singular purpose: to sustain and bolster UTMB’s clinical endeavors, especially as they impacted the poor residents of the city of Galveston. Over the next 80 years, the foundation made more than $300 million in gifts, literally transforming the resources available for patient care at UTMB.

With the help of the Foundation, the clinical infrastructure at UTMB expanded rapidly. One can follow the history of health care in the United States by charting the facilities and services that have come (and gone) over the last century, such as the Isolation Hospital for the treatment of polio patients, the Ziegler Hospital for tuberculosis care, and separate facilities for African Americans. In 1913, a Children's Hospital opened. It was followed by an inpatient facility for women two years later. An Outpatient Building was completed in 1930 and had grown to 20 different clinics by the start of World War II.

John Sealy Hospital has been rebuilt twice, most recently in 1978. In 1991, the hospital was augmented by a 90,000 square foot trauma center and emergency center. Other buildings devoted to research, education, and clinical services followed, capped in by a Regional Center of Excellence for Biodefense and Emerging Infectious Diseases Research in 2003 and, shortly thereafter, by being selected as one of two sites for a National Biocontainment Laboratory focusing on threats associated with emerging diseases.

Outpatient services have grown over time as well. By the 1990s, a network of 39 Regional Maternal and Child Health Program Clinics stretched from Nacogdoches to the Rio Grande Valley. A telehealth program begun in the early 1990s is now the world’s largest telehealth network with 2,500 encounters in some 20 medical specialties every month.
School of Nursing
Before 1890, Galveston was bereft of trained nurses. As was the custom in the South, male attendants tended to patients in the wards. A trained nurse from New York, transplanted to Galveston, helped establish the first nursing school in the South, the John Sealy School for Nursing. By 1897, the School had become a full adjunct of the Medical Department. In 1948, the School was granted admission to the Association of Collegiate Schools of Nursing. By 1961 the diploma program had been replaced by a baccalaureate program. In 1997, the UTMB School of Nursing launched the country’s first doctoral nursing program centered on the concept of healing.

School of Allied Health Sciences
In 1968, UTMB becomes home to the first school of allied health sciences in the Southwestern United States. Over the course of more than three decades, the school provided a powerful example of health care’s changing face. The School now contains academic programs in Physical Therapy, Occupational Therapy, Physicians Assistant Studies, Clinical Laboratory Sciences, and Respiratory Therapy.

Graduate School of Biomedical Sciences
In 1925, the University of Texas regents approved master’s degrees for supervised work in five basic science departments at UTMB. In 1942, the first Ph.D. for work on the Galveston campus was awarded to a University of Texas student. By 1952, UTMB received formal approval to begin doctoral programs in anatomy, physiology and pharmacology. Today, the Graduate School includes more than 350 faculty and over 250 students. Research and educational work takes place in twelve graduate programs, two institutes, and seven research centers.

Institute for the Medical Humanities
In 1973, the University became aware of the need to confront the ethical dilemmas posed by modern medicine and established an Institute for the Medical Humanities. The Institute was only the second program of its kind in the country and in 1988 it was authorized to offer the nation’s first doctorate in the medical humanities. Members of the Institute engage in research on ethical and legal problems in clinical practice and biomedical research; and on philosophical, historical, visual, literary, and religious dimensions of medicine and health care.

A University for All
In 1949, five years before Brown v. Board of Education, UTMB admitted Herman Barnett, a decorated member of the Tuskegee Airmen and a distinguished graduate of Huston-Tillotson College, to the School of Medicine. By 1967, the last vestiges of overt segregation were stripped away when the “whites only” signs were quietly removed from restrooms and water fountains. By the 1970’s, UTMB President William Levin pledged that in the future the student body would reflect the diversity of the patients who depend on UTMB for care. Now, forty years later, UTMB is one of the country’s most diverse academic health centers, among the nation’s top granting institutions of medical degrees for Hispanic Americans and seventh in the number of medical degrees awarded to African-Americans.
Today, UTMB is dedicated to educating health science professionals and scientific investigators, caring for patients, and solving biomedical puzzles through scientific inquiry. To guide its actions, UTMB has established six goals:

- Provide instruction that prepares students, residents, and fellows to meet the evolving health needs of all segments of our society.
- Provide innovative health care that is accessible, responsive, economical, efficient, and effective in meeting diverse health care needs.
- Provide public service by updating health care practitioner skills and knowledge to meet evolving needs.
- Conduct research, both within the institution and in collaboration with other entities that meets the highest standards of scientific inquiry.
- Provide institutional support and ancillary operations that are efficient and effective.
- Maximize opportunities for historically underutilized businesses, particularly those operating within the state of Texas.
## Appendix D. synergy Activity Charts

<table>
<thead>
<tr>
<th>Activity Description (may be phased in across years and / or student groups)</th>
<th>Student Groups Participating</th>
<th>synergy Objectives</th>
<th>Implementation Timeline Notes</th>
<th>Assessment Notes</th>
<th>Cost Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small group learning activities</strong></td>
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<tr>
<td><strong>Problem-based Learning (PBL)</strong></td>
<td>• Clinical Laboratory Sciences (CLS) • Occupational Therapy (OT) • Physician Assistant (PA) • Physical Therapy (PT) • Respiratory Care (RC) • Medicine (SOM) • Nursing – BACC-2 • Nursing - BSN • Nurse practitioner (NP) • Nursing - doctoral</td>
<td>1.1 1.2 1.3 1.4</td>
<td>PBL is an ideal first activity for students as they begin to learn about other professions while simultaneously forming their own professional identity. Cases can be written and implemented for any number of professions, providing an opportunity to start early in the QEP implementation with simpler cases involving 2-3 professions and adding greater complexity in subsequent years. Ideally each team of students will work together on several cases over an extended period of time (e.g., a semester).</td>
<td>The knowledge objectives targeted by these exercises will be assessed by written examination items. The behavioral and performance aspects will be assessed by faculty participating in the exercises. The latter assessments will focus on student participation, collaboration, and effective teamwork. <strong>Objective 1.4</strong> will be assessed by capturing social networking among team members, and using worksheets during small group activities to capture team problem-solving. Methods of integration of performance scores into grading schemes in each program will need to be developed.</td>
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<td>Faculty time for case development and course integration – 0.1 FTE per program X 10 programs = 1.0 total faculty FTE per year</td>
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<td></td>
<td>Faculty time for teaching – 30 contact hours per group per semester (15 weeks) X specified groups per semester X 3 semesters / year = ___ contact hours per year = ___ faculty teaching FTE</td>
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<td></td>
<td>Coordinator time –</td>
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<td></td>
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<td></td>
<td>Reproduction costs (e.g., paper handouts, graphics) –</td>
<td></td>
</tr>
<tr>
<td>Activity Description (may be phased in across years and/or student groups)</td>
<td>Student Groups Participating</td>
<td>synergy Objectives</td>
<td>Implementation Timeline Notes</td>
<td>Assessment Notes</td>
<td>Cost Notes</td>
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<tr>
<td><strong>Team Learning (TL)</strong></td>
<td>• Clinical Laboratory Sciences • Occupational Therapy • Physician Assistant • Physical Therapy • Respiratory Care • Medicine • Nursing – BACC-2 • Nursing - BSN • ANP – Adult acute care • Nursing - doctoral</td>
<td>1.1 1.2 1.3 1.4</td>
<td>This learning format requires all team members to be ready and able to apply their knowledge and to rely on others with complementary knowledge to solve patient problems in a performance-assessed and mildly competitive environment. Ideally each team of students will work together on several cases over an extended period of time (e.g., a clinical module).</td>
<td>Individual and group readiness assurance tests (RATs) assess the degree to which students have individually prepared for the activity, and the degree to which the team can answer questions collaboratively. Improptu group problem-solving is assessed via the Application-Focused exercise. Peer evaluation is an integral part of the TL experience.</td>
<td>Faculty time for case development and course integration – 0.1 FTE per program X 10 programs = 1.0 total faculty FTE per year</td>
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<td></td>
<td><strong>Faculty time for teaching</strong> – 2 faculty per 30 students X 1-2 contact hours per student per week X____ weeks per clinical module = ____ faculty contact hours per module X____ modules per year = ____ faculty teaching FTE</td>
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<td><strong>Coordinator time</strong> –</td>
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<td></td>
<td><strong>Reproduction costs</strong> (e.g., paper handouts, graphics) –</td>
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</tr>
<tr>
<td><strong>Practice and Service Learning Activities in Interprofessional Education</strong></td>
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<tr>
<td>Activities range from clinical care to community service. Each team will comprise representatives from at least 2 or more disciplines.</td>
<td>• PA • OT • PT • RT • Nursing students • Med students</td>
<td>1.1-1.4 2.1-2.5</td>
<td>Year 1: - enhance one existing exemplary IP team activity and experiences Year 2-5: - enhance increasing numbers of existing IP team activity, add additional activities, add more learners and incorporate changes revealed through evaluation</td>
<td>1) Assess feasibility 2) Written reflection by students 3) Pre-post assessment of students’ knowledge of roles of other healthcare professionals in this and similar situations 4) Written surveys or focus groups 5) Implement and utilize longitudinal tracking data of students’ perceptions of the value/roles of other professionals.</td>
<td>1) Funds / support for research personnel for data processing and analysis 2) Faculty time to develop, implement new activities across learner groups and evaluate them. 3) Fund designated representatives could attend conferences on IPE 5) Fund external speakers with expertise in IPE 6) Durable and disposable supplies, paper, DVDs, computers, printers, etc. 7) Classroom or conference room space - factor in utilities, and depreciation.</td>
</tr>
</tbody>
</table>
### Activity Description (may be phased in across years and / or student groups)

<table>
<thead>
<tr>
<th>Student Groups Participating</th>
<th>synergy Objectives</th>
<th>Implementation Timeline Notes</th>
<th>Assessment Notes</th>
<th>Cost Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Simulation-Based Activities in Interprofessional Education</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Mixed-group ACLS (or any first-responder) training</strong></td>
<td></td>
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</tr>
<tr>
<td>Mix student groups for this required training rather than scheduling homogeneous student groups. Mix students and practitioners from different professions in ACLS training sessions.</td>
<td>- Medical&lt;br&gt;- Respiratory Care&lt;br&gt;- NP students from UTMB&lt;br&gt;- EMT / Paramedic students from Galveston College</td>
<td>1.2&lt;br&gt;2.1&lt;br&gt;3.1&lt;br&gt;3.3</td>
<td>This could be started as soon as scheduling constraints allow.</td>
<td>1) Assess feasibility&lt;br&gt;2) Obtain initial learner impressions of I-P impact&lt;br&gt;3) Use longitudinal tracking of students’ perceptions</td>
</tr>
<tr>
<td><strong>Expansion of BSN program’s dying-child simulation (using SimBaby simulator and role-playing) to include other learner groups</strong></td>
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<tr>
<td>Learners rotate roles throughout the simulation (family members, professional roles, etc.). Extensive debriefing occurs after the simulation has been completed. Expand the SON hospitalized-child simulation with SimBaby and family to include other learner groups and their professional roles in the hospital setting. Eventually include chaplains / lay chaplains, medical/clinical social workers from hospital staff.</td>
<td>- Nursing students – all levels&lt;br&gt;- Medical students&lt;br&gt;- RT students&lt;br&gt;- PA students&lt;br&gt;(Lay chaplain trainees from W. Temple Ctr? They already use our SPs in their final training session.)</td>
<td>1.3&lt;br&gt;2.1&lt;br&gt;2.2&lt;br&gt;2.3&lt;br&gt;3.3&lt;br&gt;5.2</td>
<td>Year 1: develop expanded simulation and incorporate into curriculum of 1 additional learner group.&lt;br&gt;Year 2: Include additional learner groups.&lt;br&gt;Year 3: Expand to include non-medical resource people working in the hospital context (e.g., social workers, chaplains).</td>
<td>1) Written reflection by students on what they learned from simulation, keyed to QEP objectives&lt;br&gt;2) Assessment of students' knowledge of roles of other healthcare professionals in this and similar situations (e.g., pre- and post-test questions such as &quot;What is the role in this setting of an RT? An RN?&quot;)&lt;br&gt;3) In later years, expand into new Simulation Center space.</td>
</tr>
</tbody>
</table>
## Activity Description (may be phased in across years and / or student groups)

**Simulation based on issues associated with death and dying**

Standardized patient (SP) is given diagnosis and prognosis. Family members are present. Patient and family members are included in interactions with students.

Student groups work in teams for patient and family care, support, and planning.

<table>
<thead>
<tr>
<th>Student Groups Participating</th>
<th>synergy Objectives</th>
<th>Implementation Timeline Notes</th>
<th>Assessment Notes</th>
<th>Cost Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing students – all levels</td>
<td>1.3</td>
<td>Year 1: Develop scenario</td>
<td>Collect assessment data from participants through simulation debriefing (verbal and / or written): Faculty / expert observers will observe and document learners’ taking appropriate responsibilities during simulation.</td>
<td>1) Coordinator time for scheduling students (see QEP Coordinator – 1 FTE)</td>
</tr>
<tr>
<td>Medical students</td>
<td>2.2</td>
<td>Year 2: Implement scenario for 2-3 learner groups; evaluate and refine scenario</td>
<td></td>
<td>2) Standardized patients (recruiting, training, portrayal time) $500 for one set of standardized patients and one simulation per year for years 1-5; multiplied by number of repetitions required.</td>
</tr>
<tr>
<td>PA students</td>
<td>2.3</td>
<td>Year 3: Re-implement and re-evaluate scenario</td>
<td></td>
<td>3) Simulation and debriefing space through year 2, new space years 3 and beyond</td>
</tr>
<tr>
<td>CLS students</td>
<td>3.1</td>
<td>Years 4 &amp; 5: Expand activity to other learner groups</td>
<td></td>
<td>4) 0.1 FTE per learner group for faculty to develop, implement, and evaluate activity : 0.2 - .03 in years 1-3; in years 4-5 up to 0.7 FTE</td>
</tr>
<tr>
<td>RT students</td>
<td>5.2</td>
<td></td>
<td></td>
<td>5) 1 FTE staff time years 1-5 to collaborate / recruit / train / monitor.</td>
</tr>
<tr>
<td>PT students</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OT students</td>
<td></td>
<td></td>
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<tr>
<td>Social workers and nutritionists may also be involved.</td>
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</tbody>
</table>

## Virtual “Chronic Wounds Office” simulation

Students see simulated patients (SPs) in a chronic wounds clinic ‘virtual office’, where patients are shown to clinic rooms, interviewed & examined, referred to lab, PT, OT, etc. (all available in the ‘virtual clinic’).

SPs would portray patients presenting with wounds secondary to paraplegia,

<table>
<thead>
<tr>
<th>Student Groups Participating</th>
<th>synergy Objectives</th>
<th>Implementation Timeline Notes</th>
<th>Assessment Notes</th>
<th>Cost Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing students – all levels</td>
<td>1.1</td>
<td>Year 1-2: Design new simulation space and develop 1 Virtual Office scenario</td>
<td>Compare learners’ pre / post responses to series of questions designed to tap perceptions of interprofessional health care.</td>
<td>1) Coordinator time for scheduling students (QEP coordinator as specified)</td>
</tr>
<tr>
<td>Medical students</td>
<td>1.2</td>
<td>Year 3: Run Scenario 1 with 2-3 relevant learner groups; evaluate scenario</td>
<td>In the post-simulation debriefing, discuss a) the elements of effective teamwork observed during the simulation and b) elements of the team dynamics that hindered effective patient care in the</td>
<td>2) Standardized patients (recruiting, training, portrayal time) (Year 2 for standardized patients allocate approximately $2000 for 200 students; approximately $3000 for 300 students; $4000 for 400 students)</td>
</tr>
<tr>
<td>PA students</td>
<td>1.3</td>
<td>Year 4: Re-implement revised scenario and re-evaluate; develop Scenario 2</td>
<td></td>
<td>3) Wound care supplies</td>
</tr>
<tr>
<td>CLS students</td>
<td>1.4</td>
<td></td>
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<tr>
<td>RT students</td>
<td>2.5</td>
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<tr>
<td>PT students</td>
<td>3.1</td>
<td></td>
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<tr>
<td>OT students</td>
<td>3.2</td>
<td></td>
<td></td>
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<tr>
<td>Social workers and nutritionists may also be involved.</td>
<td>3.3</td>
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</tbody>
</table>
### Activity Description (may be phased in across years and / or student groups)

**Student Groups Participating**
- Medical Students
- Nursing Students – all levels
- PA students
- PT students
- OT students
- (CAM practitioners, including chiropractors)

**synergy Objectives**
1.1
1.2
1.3
1.4
2.5
3.1
3.3

**Implementation Timeline Notes**
- Year 1-2: Design Scenario 1 and details of its set-up; identify equipment and technical support
- Year 3: Implement Scenario 1 with 2-3 learner groups and evaluate scenario
- Year 4: Re-implement Scenario 1; develop Scenario 2
- Year 5: Expand Scenario 1 to additional learner groups; implement and evaluate Scenario 2

**Assessment Notes**
- Compare learners’ pre / post responses to questions specific to the activity:
  - In the post-simulation debriefing, discuss:
    - a) the elements of effective teamwork observed during the simulation and
    - b) elements of the team dynamics that hindered effective patient care in the simulation scenario and
    - c) how your understanding of the role of other professionals changed as a result of this simulation (learners’ observations can

**Cost Notes**
- $150 per year.
- Approximately $150 per year.
- 4) Simulation space to accommodate office layout and more learners; debriefing space (SON and standardized patient center space to be used for years 1 and 2, new simulation space for expansion in years 3-5.
- 5) Faculty time to develop, implement, and evaluate activity (0.1 FTE per activity per year)
- 6) SP staff time to collaborate in case development, recruit / train / monitor SPs (1 FTE)

### Telemedicine for virtual consults in simulated settings

**Using standardized patients, students from appropriate disciplines present or are consulted about the patient using telemedicine technology.**

The scenario is set in a Skilled Nursing Facility; the SPs would present with issues related to aging, injury recovery, chronic disease states.

Communication skills within the “near side” and “far side” healthcare team members are emphasized.

| Medical Students | Year 5: Implement Scenario 1 with additional learner groups; run Scenario 2 and evaluate | simulation scenario and c) how your understanding of the role of other professionals changed as a result of this simulation (learners’ observations can be captured in writing prior to the group discussion for assessment purposes). Faculty / expert observers will document:
| Nursing Students – all levels | | a) participants’ contributions to effective teamwork (or ineffective behaviors); and b) participants’ communications with other team members, particularly across professional groups.
| PA students | | Compare learners’ pre / post responses to questions specific to the activity:
| PT students | | In the post-simulation debriefing, discuss:
| OT students | | a) the elements of effective teamwork observed during the simulation and
| (CAM practitioners, including chiropractors) | | b) elements of the team dynamics that hindered effective patient care in the simulation scenario and
| | | c) how your understanding of the role of other professionals changed as a result of this simulation (learners’ observations can

- 1) Coordinator time for scheduling students (QEP coordinator previously defined)
- 2) Standardized patients – recruiting, training, portrayal time (1 sp per simulation at cost of approximately $50 base cost for training; year 3 for 250 students approximately $400; year 4 for 350 students approximately $560; year 5 for 500 students at cost of approximately $800)
- 3) Simulation space to accommodate set-up and additional learner groups; debriefing space (use
### Activity Description (may be phased in across years and / or student groups)

#### Student Groups Participating
- Nursing students – all levels
- PA students
- PT students
- OT students
- CLS students
- RT students
- Medical students

#### synergy Objectives
1.1
1.2
1.3
1.4
3.1
3.3

#### Implementation Timeline Notes
- Year 1: Select first WHISSL scenario and customize for desired learning objectives and learner groups.
- Year 2-5: Pilot-test develop or customize additional scenarios in WHISSL platform and add more learners

#### Assessment Notes
- Compare learners’ pre / post responses to activity-specific questions
- Faculty facilitators observe and document individual students’ handling of teamwork dynamics and communications between different professional groups

#### Cost Notes
- existing space for years 1-3; expand into new space for years 4-5
- Faculty time to develop, implement, and evaluate activity (0.1 FTE per program per year)
- SP staff time to collaborate in case development, recruit/train/monitor SPs (1 FTE)
- Telemedicine equipment access
- Technical support for telemedicine connections (1 FTE)
- Line time for telemedicine connections?

### Web-based scenarios in WHISSL platform, based on real patient stories, in which the case plays out under the direction of one or more faculty members and students take on their professional roles

WHISSL cases available on patient conditions that include, but are not limited to, pediatric leukemia, end of life issues, spina bifida, lung cancer, abuse and depression, geriatric stroke, systemic lupus erythematosus, tuberculosis and back pain, foot injury, dementia, allergic bronchopulmonary aspergillosis, head and neck and cancer prevention, transplant acquired Kaposi’s sarcoma, mental health, breast cancer, diabetes and

- Faculty time for development, implementation, and evaluation of activity (0.1 in year 1; 0.25 FTE for years 2-5)
- Web developer’s time (0.2 FTE in years 2-5)
- Web-site maintenance / technical support (0.5 FTE per year)
## Activity Description (may be phased in across years and / or student groups)

- Family stress, degenerative joint disease, arthritis and herbal medicine, myocardial infarction and hip fracture.

## Web-based case on topic of post-stroke rehabilitation written and used by students from different groups using **Design-A-Case** platform

The patient is followed through hospitalization through discharge to SNF and then discharge to home care.

<table>
<thead>
<tr>
<th>Student Groups Participating</th>
<th>synergy Objectives</th>
<th>Implementation Timeline Notes</th>
<th>Assessment Notes</th>
<th>Cost Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing students – all levels</td>
<td>1.1-1.4</td>
<td>Year 1: Expand D-A-C platform to accommodate multiple learner paths through case.</td>
<td>Compare learners’ pre / post responses to activity-specific questions</td>
<td>1) Faculty time to oversee case development and use (0.1 FTE per program per year)</td>
</tr>
<tr>
<td>CLS (anti-coagulant monitoring)</td>
<td>2.2</td>
<td>Year 2-5: Convene faculty from relevant learner groups to develop student recruitment and support processes; evaluate and revise cases as needed.</td>
<td>Student reflective essays</td>
<td>2) D-A-C development costs / programmer time (1 FTE for years 1-5)</td>
</tr>
<tr>
<td>PT students</td>
<td>2.3</td>
<td></td>
<td>Supervising faculty evaluate the case for accuracy and educational effectiveness; and student during the authoring process.</td>
<td>3) Web-site maintenance / technical support (0.5 FTE)</td>
</tr>
<tr>
<td>OT students</td>
<td>2.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical students</td>
<td>3.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA students</td>
<td>3.2</td>
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<td></td>
<td>3.3</td>
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<td></td>
<td>4.4</td>
<td></td>
<td></td>
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<td></td>
<td>5.2</td>
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</tbody>
</table>

## Simulation based on patient-error incident

E.g., fall in hospital room, medication error

Web-based instruction (introductory concepts) and Simulation Center “virtual hospital” full simulation with SPs, mannequins (e.g., SON’s VitaSim), etc.

The nature of the error in the simulation determines the best mix of student groups to include for a given learning event.

<table>
<thead>
<tr>
<th>Student Groups Participating</th>
<th>synergy Objectives</th>
<th>Implementation Timeline Notes</th>
<th>Assessment Notes</th>
<th>Cost Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical students</td>
<td>1.1</td>
<td>Year 1: Draft web-based instruction to introduce relevant concepts; design simulation space to support simulation scenario</td>
<td>Use set of Goal 1 pre / post questions listed for previous activities.</td>
<td>1) Faculty time to develop, implement, and evaluate web-based and simulation activities (0.25 FTE per program per year)</td>
</tr>
<tr>
<td>Nursing students – all levels</td>
<td>1.2</td>
<td>Year 2: Implement and evaluate web-based instruction; develop simulation scenario</td>
<td>Add pre / post questions about students’ definitions of their own and other professions’ responsibilities to patients with respect to these specific error incidents.</td>
<td>2) Standardized patients -- recruiting, training and portrayal time (assume 1-2 SPs per scenario at cost of approx.$200 for year 3, $400 for year 4 and $800 for year 5)</td>
</tr>
<tr>
<td>PA students</td>
<td>1.3</td>
<td>Year 2: Implement and evaluate web-based instruction; develop simulation scenario</td>
<td>The debriefing session (with pre-debriefing written responses) will address the teamwork elements critical to the simulated error incident and measurement of patient-safety outcomes from the perspective of all disciplines involved.</td>
<td>3) Simulation space allowing “virtual hospital” set up for multiple learners; debriefing space (use new space in years 3-5)</td>
</tr>
<tr>
<td>CLS students</td>
<td>1.4</td>
<td>Year 3: Continue web-based instruction use; implement first simulation with 2-3 learner groups and evaluate</td>
<td>Faculty / expert observers will document individual</td>
<td></td>
</tr>
<tr>
<td>PT students</td>
<td>2.3</td>
<td>Year 4: Expand scenario to more learner groups; develop second scenario</td>
<td></td>
<td>4) SP program staff time to collaborate in case development, recruit / train / monitor SPs during</td>
</tr>
<tr>
<td>OT students</td>
<td>2.4</td>
<td>Year 5: Implement and evaluate second scenario</td>
<td></td>
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</tr>
</tbody>
</table>
### Activity Description (may be phased in across years and / or student groups)

**Simulation to allow students access to lessons learned from LifeWings® training for faculty and staff**

Create one or more simulations to allow students to learn about speaking up when error potential is identified.

Scenarios set in in-patient setting; could focus on patient error potential.

Focus on shared roles and responsibilities on the team.

<table>
<thead>
<tr>
<th>Student Groups Participating</th>
<th>synergy Objectives</th>
<th>Implementation Timeline Notes</th>
<th>Assessment Notes</th>
<th>Cost Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical students</td>
<td>1.4</td>
<td>Year 1: Identify faculty and simulation designers; design simulation space appropriate for the activity</td>
<td>Pre / post questions about effective team dynamics and problems with same in high-stakes patient-care settings</td>
<td>implementation (1 FTE in years 2-5)</td>
</tr>
<tr>
<td>Nursing students – all levels</td>
<td>2.4</td>
<td>Year 2: Create first simulation for 2-3 learner groups</td>
<td>Faculty / expert observations of learners’ teamwork and leadership behaviors and interprofessional communications</td>
<td>5) Simulation technician to support mannequin use (0.3 FTE for years 2-5)</td>
</tr>
<tr>
<td>PA students</td>
<td>3.1</td>
<td>Year 3: Implement and evaluate first simulation; design second simulation</td>
<td>The debriefing session (with pre-debriefing written responses) will address the teamwork elements critical to the high-stakes patient-care setting and measurement of patient-safety outcomes from the</td>
<td>6) Acquisition of mannequins appropriate to support simulation (use existing SimMan mannequins for years 2-3; purchase 3 more for years 4-5 at cost of approximately $8,400 each or $25,200)**</td>
</tr>
<tr>
<td>CLS students</td>
<td>3.2</td>
<td>Year 4: Implement and evaluate first and second simulations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PT students</td>
<td>3.3</td>
<td>Year 5: Expand simulations’ use to additional learner groups</td>
<td></td>
<td>7) Web designer time to prepare web-based case (0.5 FTE)</td>
</tr>
<tr>
<td>OT students</td>
<td>4.1 (error reduction)</td>
<td>5.2</td>
<td></td>
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<tr>
<td>RC students</td>
<td></td>
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</tbody>
</table>

1) Faculty time to develop, implement, and evaluate activity (0.1 FTE per program per year)

2) SimMan-type mannequins sufficient to accommodate all targeted learners (years 1-3: use existing equipment; years 4-5, acquire 3 additional SimMan mannequins at $33,000 each or $99,000)**

3) Simulation space allowing "virtual hospital" set up for multiple learners; debriefing space (use existing space through year 2; expand into new space for years 3-5)

4) Simulation program staff
### Learner Initiated Projects

Learners assemble interprofessional student teams to develop and implement interprofessional projects ranging from clinical care to community service.

Each team will comprise representatives from at least 3 or more disciplines.

<table>
<thead>
<tr>
<th>Activity Description (may be phased in across years and / or student groups)</th>
<th>Student Groups Participating</th>
<th>synergy Objectives</th>
<th>Implementation Timeline Notes</th>
<th>Assessment Notes</th>
<th>Cost Notes</th>
</tr>
</thead>
</table>

- Clinical Laboratory Sciences
- OT
- PT
- PA
- RC
- Medical
- Nursing BACC-2
- BSN
- NP and doctoral students

| Year 4: evaluate projects, assist with implementation, begin assessment process and collect data |
| Year 5: evaluate projects and assist with implementation, continue assessment process and collect data |

**Assessment Notes**

- Student attitudes
- Evaluation of the IP team
- Formal project assessment
- Clinical and service quality indicators / outcomes

**Cost Notes**

- Time to collaborate in case development and implementation (0.5 FTE)  
- 5) Simulation technician to support mannequins’ use (0.3 FTE per year)  
- To be determined based on project proposed  
- Funds / support from external funding sources as appropriate

---

**Learner Initiated Projects**

- Learners assemble interprofessional student teams to develop and implement interprofessional projects ranging from clinical care to community service.
- Each team will comprise representatives from at least 3 or more disciplines.
Examples of patient problems that may be used as case foci.

<table>
<thead>
<tr>
<th>Clinical problems</th>
<th>CLS</th>
<th>OT</th>
<th>PA</th>
<th>PT</th>
<th>RC</th>
<th>MD</th>
<th>BACC-2</th>
<th>BSN</th>
<th>NP</th>
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</thead>
<tbody>
<tr>
<td>Asthma</td>
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<td>X</td>
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<tr>
<td>Stroke</td>
<td>X</td>
<td>X</td>
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<td>CHF</td>
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<td>X</td>
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<tr>
<td>Infection / antibiotic resistance</td>
<td>X</td>
<td>X</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Respiratory failure, post-ICU</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Acute hepatitis</td>
<td>X</td>
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<td></td>
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<tr>
<td>Respiratory failure, post-ICU</td>
<td>X</td>
<td>X</td>
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</table>
Appendix E. Sample synergy Student Portfolio Template

Portfolio Template

Demographics

   Student Name
   Credentials
   School
   Date of UTMB entry
   Anticipated Graduation Year
   Contact information

   synergy faculty advisor

Philosophy statement and reflective writings

Future Education plans

Career objectives

UTMB clinical rotations by year with dates of experience

Evaluations

Projects,

Presentations,

Research

Summary of synergy experiences
Appendix F. synergy Assessment Related Instruments

1. Instruments for Measurement of Student Learning Outcomes

Student _____________________ Faculty ___________________

Instructions: For each of the three categories, circle the number that best describes the student’s performance. Use the COMMENT section to provide specific examples of exceptional or less than expected performance.

I. Preparedness and participation.
   1. Exceptionally well prepared and consistently participates.
   2. Generally well-prepared and consistently participates.
   3. Occasionally not well-prepared or does not appropriately participate.
   4. Frequently not well-prepared or does not participate.
   5. Consistently not prepared or does not participate.

II. Knowledge Development
   1. Demonstrates exceptional mastery of knowledge.
   2. Demonstrates expected mastery of knowledge.
   3. Demonstrates occasional difficulty in mastery or integration of knowledge.
   4. Demonstrates frequent difficulty in mastery of knowledge.
   5. Demonstrates no progress in mastery of knowledge.

III. Professional Behavior
   1. Demonstrates exceptional professional behavior.
   2. Consistently demonstrates professional behavior.
   3. Demonstrates occasional unprofessional behavior.
   4. Frequently demonstrates unprofessional behavior.
   5. Consistently demonstrates unprofessional behavior, plagiarizes work or purposefully submits false patient information.

IV. Interprofessional Teamwork
   1. Demonstrates exceptional interprofessional teamwork.
   2. Consistently demonstrates good interprofessional teamwork.
   3. Demonstrates occasional poor interprofessional teamwork.
   4. Frequently demonstrates poor interprofessional teamwork.
   5. Consistently demonstrates poor interprofessional teamwork.

COMMENTS
2. Instruments for Program Assessment

Faculty Signature: ________________________________ Date: ________________
Name: ___________________________ Level of Training: _____________________
School:___________________________ Rotation Dates:_______________________

Interprofessional Activity Name
Focus:

Section 1: Administrative Information

Activity Director:
Contact Information:
Other Participating Faculty:
Required or Elective:

Where to show up for the activity:

Faculty Responsibilities:
1. At the beginning of the rotation, the activity director (or supervising faculty) will review with the student the expectations and duties and the learning goals & objectives, emphasizing their relationship to interprofessional education.
2. During the activity, faculty are expected to provide feedback to the student to encourage continuous improvement.
3. Faculty are expected to complete an end-of-activity evaluation.

Student Responsibilities:
Education-related activities

<table>
<thead>
<tr>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
<th>Sun</th>
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</tbody>
</table>
## Section 3: Evaluation Methods

### Section 4: Learning Goals and Objectives

<table>
<thead>
<tr>
<th>GOAL 1:</th>
<th>Objective 1.1 Describe your own professional role.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Objective 1.2 Identify health care professionals in disciplines other than your own who provide crucial expertise for the health and welfare of patients in specific contexts (e.g., specific diseases, populations, non-clinical aspects of healthcare).</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Objective 1.3 Describe (a) the roles of professionals in disciplines other than your own, (b) the ways in which these professionals facilitate care of our patients, and (c) the specific contexts in which this occurs.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Objective 1.4 Describe the mechanisms required to translate the expertise of each team member into effective patient care and describe the team dynamics that may hinder the application of this expertise.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<th>GOAL 2:</th>
<th>Objective 2.1 Describe and analyze one or more interprofessional team(s) which provide(s) care to patients.</th>
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<td>Objective 2.2 Discuss the roles of each interprofessional team member and their contribution to care of patients.</td>
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<td>Objective 2.3 Discuss different health professionals’ perceptions of their responsibility to patients and relationships with other professions.</td>
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<td>Objective 2.4 Identify characteristics of effective teams and identify common barriers and facilitating mechanisms to effective team work.</td>
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<td>Objective 2.5 Identify gaps and mismatches in understanding of your own health profession and other professions in the context of patient care.</td>
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<tr>
<th>GOAL 3:</th>
<th>Objective 3.1 Demonstrate effective teamwork by accepting or yielding team leadership as appropriate to patient needs.</th>
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<td>Objective 3.2 Discuss teambuilding and team dynamics, including conflict resolution.</td>
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<td>Objective 3.3 Demonstrate effective communication with other professionals in a shared language.</td>
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<tr>
<th>GOAL 4:</th>
<th>Objective 4.1 Provide examples of how the selected health care outcome is conceptualized and measured in your own discipline and in other disciplines.</th>
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<td>Objective 4.2 Participate in the development of research demonstrating improved outcomes for patients or increased satisfaction for professionals or review the current (or note the lack of) research on this topic.</td>
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<td>Objective 4.3 Identify and address one unmet public health need in the context of an interprofessional team.</td>
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<td>Objective 4.4 Develop curriculum focusing on communication, patient safety, quality improvement, and team-building in the context of interprofessional teams.</td>
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<th>GOAL 5:</th>
<th>Objective 5.1 Develop or participate in one team-building activity.</th>
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<td>Objective 5.2 Accept responsibility and accountability in contributing to patient-centered and team-delivered care.</td>
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### Section 5: Core Competencies across all rotations

**Self-Assessment:** Assess your level of mastery for each of the objective:

**Pre-Activity:** circle number ○

**Post-Activity:** X number ⊗

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<th>1 = I need to improve</th>
<th>2 = I occasionally slip</th>
<th>3 = I am doing well</th>
<th>4 = I am better than many peers</th>
<th>5 = I excel</th>
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**Practice Based Learning and Improvement**

1. Recognizes personal limitations in knowledge and skills; asks for help; searches for information

2. Shows evidence of reading and of critical appraisal of published evidence

3. Reflects on performance and experiences

4. Shows evidence of correcting errors and learning from experience

**Interpersonal and Communication Skills**

1. Demonstrates competency in verbal communication skills with Faculty, team members, and colleagues (e.g. presenting cases, discussing findings and plans, reflecting on experiences)

2. Demonstrates competency in written communications (e.g. e-mails to Faculty, chart notes).

3. Can give explanations to pediatric patients using terms they can understand (e.g. presenting diagnoses, prognosis, and plans; giving difficult news; providing health education)

4. Can give explanations to families using terms they can understand (e.g. presenting diagnoses, prognosis, and plans; giving difficult news; providing health education)

**Systems-Based Practice**

On this rotation, identify the type of healthcare coverage for individual patients. Discuss how different models of health care delivery and healthcare financing (e.g., HMO, PPO, fee-for-service, Medicaid, CHIP, public health care, school-based care) impact access to and delivery of care to patients seen on this rotation.

For selected diagnostic measures and treatments used during this rotation, identify the costs of these procedures and factors which affect cost and quality.

Identify ICD codes and CPT codes commonly used in billing practices on this rotation; and explain how use of these codes affects charges and payment for services.

Advocate for patients by helping them negotiate health care system complexities and by identifying resources to meet their needs.

Through discussion with faculty and / or actual effort, demonstrate your understanding of strategies which may be useful to work with clinic or hospital managers to assess, coordinate, and improve patient care.

Discuss ways in which pediatricians can advocate for the promotion of health and the prevention of disease and injury in populations.

Identify medical errors and near-miss errors in your own practice and discuss ways to prevent errors, including both changes in individual practice and systems changes.

**Professionalism**

The Resident exhibits professionalism by showing the following attributes:

1. Compassion (empathy; awareness of other’s feelings and experiences)

2. Honesty (truthfulness, including admission of mistakes)

3. Altruism (unselveshelf concern for the welfare of others)

4. Responsibility (for conduct, work obligations, and self-improvement)

5. Aiming for excellence (in self, others, and the system of healthcare)

6. Confidentiality

7. Team Player

8. Ethical approach

9. Respect to patients / families, colleagues, team members and faculty
### Section 6: Personal Learning Goals or Targets

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<th>Post-rotation assessment:</th>
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<td>1 not met</td>
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<td>2 met partially</td>
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<td>3 accomplished</td>
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Last updated 1/11/2008
Acknowledgement: V. Niebuhr, UTMB Pediatrics. vniebuhr@utmb.edu
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