

**Nursing Innovation Grant Program – Category D
Cover Page**

Project #	1. Institution: Midwestern State University		
1. Project Title: High Fidelity Clinical Simulation: A Regional Collaborative for Increasing Nursing Enrollment and Accelerating the Orientation of New Graduates			
3. Major Partners Vernon College United Regional Health Care Systems		4. Keyword Description (max. 5 words or phrases) (1) increased enrollment (2) high fidelity simulation (3) clinical decision making (4) competency validation (5) accelerated new graduate orientation	
5. Proposed Funding a. NIGP-D \$1,272,410 b. Matching Funds 236,701 c. Total <u>\$1,509,111</u>		6. Total amount requested for three-year period ending August 31, 2007 <u>\$1,272,410</u>	
		7. FY2005 Request <u>\$502,686</u>	8. FY2006 Request <u>\$383,362</u>
		9. FY2007 Request <u>\$386,362</u>	
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I certify that the statements herein are true, complete, and accurate to the best of my knowledge. I further certify that if program funds are awarded, this institution accepts the obligation to comply with terms and conditions set by the Texas Higher Education Coordinating Board.			
<u>Signature</u>		<u>Date</u>	

**Nursing Innovation Grant Program – Category D
Project Abstract**

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Project #	<p>1. Institution and Project Title</p> <p style="text-align: center;">Midwestern State University High Fidelity Clinical Simulation: A Regional Collaborative for Increasing Nursing Enrollment and Accelerating the Orientation of New Graduates</p>
<p>2. Keyword Description (max. 5 words or phrases)</p> <p>(1) increased enrollment; (2) high fidelity simulation; (3) clinical decision making; (4) competency validation; and (5) accelerated new graduate orientation</p>	
<p>1. Abstract</p> <p>Today's nursing shortage, characterized by fewer nurses adequately prepared to meet the changing needs of a diverse population, has been the focus of intense national scrutiny. In Texas, despite rising admissions and graduation increases, the future demand for registered nurses in Texas still exceeds the potential supply (THECB, 2004, p. ii). A shortage of adequately prepared faculty appears to be one of the greatest impediments to increasing capacity in Texas nursing programs. If new faculty cannot be hired, current faculty must be used more efficiently. The <u>pilot</u> project provides a solution through the development of a regional interdisciplinary simulation center shared by a health care system, an associate degree nursing program, and a baccalaureate school of nursing. Simulation center staff with strong clinical expertise will teach and validate clinical skills for nursing students from the two programs as well as for nurses in the health care system. This approach will reduce the amount of time that faculty in the two schools must spend in competency education and validation and will allow more students to be admitted without increasing the number of faculty required. <u>“Competency transcripts” will be developed that reflect the Differentiated Entry Level Competencies for Associate Degree and Baccalaureate Nurses. These transcripts will document mastery of required competencies and will be provided to future employers of new graduates of the two programs. This process is anticipated to decrease time required for competency evaluation during new graduate orientation.</u></p> <p><u>The pilot project includes evaluative methodologies to determine whether this solution a) is cost effective, b) contributes to perceived clinical competence among graduates, c) increases enrollment in entry-level nursing programs without addition of new faculty positions, and d) confirms or challenges the Baramee and Blegen (2003) model of perceived clinical competence.</u></p>	

**Nursing Innovation Grant Program – Category D
Project Description**

Project #	Institution and Project Title Midwestern State University High Fidelity Clinical Simulation: A Regional Collaborative for Increasing Nursing Enrollment and Accelerating the Orientation of New Graduates
<p style="text-align: center;">Project Scope, Goals, and Objectives</p> <p>Statement of the Problem: Today’s nursing shortage, characterized by fewer nurses adequately prepared to meet the changing needs of a diverse population, has been the focus of intense national scrutiny. According to projections from the U.S. Bureau of Labor Statistics published in the February 2004 Monthly Labor Review, more than one million new and replacement nurses will be needed in the United States by 2012 (AACN, 2004). This means that more jobs are expected to be created for registered nurses than for any other occupation in the country.</p> <p>In the state of Texas, public and private sources, including colleges and universities, have worked together to increase the number of students in both associate degree and baccalaureate nursing programs. Offers of admission and first-year entering enrollments were up by approximately 87 percent between 1997 and 2003 and after a three year decline, the number of initial RN licensure graduates in 2003 returned to 1997 levels (THECB, 2004). However, the current nursing shortage is not driven by market factors; rather it is stimulated by demographic changes, such as the general population growth, the rising proportion of people over age 65, and advances in medical technology, which accelerates the future demand for patient care service. Therefore, despite admission and graduation increases, the future demand for RNs in Texas still exceeds the potential supply (THECB, 2004. p.ii)</p> <p>A lack of adequately prepared faculty appears to be one of, if not the greatest, impediment to increasing capacity in Texas nursing programs (THECB, 2004, p. iii). The 2004 report from the Texas Higher Education Coordinating Board (THECB), “Increasing Capacity and Efficiency in Programs Leading to RN Licensure in Texas” (Draft) notes that the average entering class size of RN licensure programs increased 107 percent from 1999 to 2003, while average FTE faculty at these programs increased by only 12.5 percent for the same period. This disparity cannot continue without jeopardizing the quality of nursing education in Texas.</p> <p>Proposed Project</p> <p>Because there is a shortage of nursing faculty, current faculty must be used more efficiently. The proposed project</p>	

seeks to encourage this efficiency through the development of a regional interdisciplinary simulation center shared by a regional health care system and by both entry level associate degree nursing (ADN) and baccalaureate nursing (BSN) programs. Simulation center nursing staff with strong clinical expertise will teach and validate clinical skills for nursing students from the two programs, as well as for nurses working at the hospital. This approach will reduce the amount of time that faculty in the two schools must spend in competency education and validation and will allow more students to be admitted without increasing the number of faculty required. Regional, evidence-based consensus regarding criteria for evaluating competencies will be achieved, and students' entry into practice will be facilitated.

The proposed project will meet two of the high priority 2004 Texas Higher Education Coordinating Board (THECB) recommendations, including: a) innovation in nursing education through regionalization of common administrative and instructional functions, interdisciplinary instruction, and new clinical instruction models to maximize use of existing resources and faculty; and b) statewide and regional initiatives to share or pool faculty among nursing programs. It also meets the goal of the THECB to encourage joint appointments for practicing nurses to teach in nursing programs.

Goals

The goals of the proposed project are to:

1. Increase the number of students admitted to clinical courses at MSU and VC by 56.
2. Pilot the implementation of a collaborative regional simulation center.
3. Evaluate the effectiveness of such a center upon graduates' perceived clinical competence.
4. Determine the cost-effectiveness of such a center.

Objectives

The objectives for this proposed project are to:

1. Use Laerdal SimMan™ patient simulator equipment in a regional simulation center.
2. Develop a “competency transcript” to document validation of student competence.
3. Decrease faculty workload required for skill and competency validation.
4. Increase faculty time available for classroom and clinical teaching.
5. Reduce hospital orientation time for new graduates from MSU and VC by 75%.
6. Increase clinical opportunities for skill acquisition in a predictable, risk-free environment.

Outcomes

1. The number of generic nursing students enrolled in each nursing school will be increased as follows by the end of

the proposed project without increasing the number of faculty positions:

MSU: An increase of 40 (20 in AY 2005-06 and 20 in 2006-07).

VC: An increase of 16 (8 in AY 2005-06 and 8 in 2006-07)

2. "Competency transcripts" will be created to document skill and clinical competencies that graduates of VC ADN and MSU BSN nursing programs can perform in any hospital setting.
3. The Baramée and Blegen (2003) causal model of students' perceived clinical competence will be tested by answering the following research question: "What are the relationships among variables hypothesized to affect the new nursing graduate perceptions of clinical competence?"
4. The research question, "Does participation in the regional simulation center increase students' perception of their clinical competence?" will be answered.
5. A cost effectiveness analysis (CEA) comparing the cost of the regional simulation center to hospital/school-specific competence education/validation will be calculated.
6. A regional clinical simulation center will be established that will continue after grant funding ends through the support of MSU, VC, and URHCS, as well as through revenue generated by contracts for competency validation with area clinical agencies.

Importance of the Proposed Project

The proposed regional, interdisciplinary simulation center has numerous benefits. First, a total of 40 additional licensure-seeking nursing students will be admitted to the MSU BSN program and 16 additional students to the VC ADN program, with no increase in the number of faculty. Faculty from both schools and URHCS staff will develop consensus regarding criteria for competency evaluations needed to meet course objectives and practice in the hospital setting; simulation center staff will teach and evaluate these competencies. This evidenced-based consensus will foster agreement regarding nursing practice, enhance the quality of nursing care in the region, and increase the sense of collaboration felt by nurses of the three partnering entities. Existing nursing faculty members, who are relieved of the need to teach skills will teach additional didactic sections, collaborate with simulation center staff to create scenarios for competency evaluation, and supervise additional students in clinical experiences. Finally, the use of high fidelity patient simulation equipment will allow MSU and VC nursing students and URHCS nurses to practice multiple patient care scenarios in a realistic, controlled environment with no risk to patients (Ravert, 2002).

The consensus regarding evaluation of practice competencies and the development of “competency transcripts” will also decrease the amount of time URHCS staff spends orienting new MSU and VC graduates. URHCS administrators and educators agree that once this plan is implemented, orientation time allocated to validation of competencies will be decreased from four days to one day, representing a 75 percent reduction, because VC and MSU graduates will no longer be required to demonstrate assessment and procedural skills during hospital orientation.

Successful implementation of the regional simulation center will also facilitate consensus about the practice of other allied health professions and among other health care organizations. In addition to nursing programs, both MSU and VC offer allied health programs, including radiologic science and respiratory care at MSU and emergency medical technician, licensed vocational nursing, surgical technology, and certified nurse assistant programs at VC. During the third year of the proposed program, selected allied health programs and area health care organizations will begin to use the center. This will be an important step for interdisciplinary collaboration in both education and practice in the region, and will pave the way for the center to produce revenue to maintain operations once the granting period ends.

Numerical Impact of the Program

Over the course of the 34-month project, 40 entry-level, pre-licensure students (20% increase) will be admitted to MSU. During this time, VC will increase the entry-level admissions by 16 (14% increase). Table 1 demonstrates the enrollment of the two programs in clinical courses over the grant period. These students will have the opportunity to use the regional simulation center for at least a portion of their course of study.

Table 1: Projected Enrollment in Clinical Courses

Organization	Classification	AY 2004-05	AY 2005-06	AY 2006-07
MSU	Junior	100	120	120
	Senior	51	95	115
VC	First Year	60	68	68
	Second Year	58	58	64
Total Students		269	341	361

In addition, URHCS offers orientation to an average of 30 new nursing service personnel twice a month, so an additional 720 new hospital employees will use the center on an annual basis. It is anticipated that the center will also be used for the hospital’s annual four-hour competency evaluation, so all of the 700 nursing service employees will use the center each year. Selected allied health disciplines at MSU and VC will use the simulation center for competency education, validation, and orientation beginning in the third year of the project. Also in the third year, Sheppard Air Force

Base will begin to use the center for these purposes, as well.

Relationship to Other Funded Programs

URHCS, VC and MSU have worked collaboratively in a number of programs over the last seven years. For example, MSU was awarded a NIGP – C grant, Academic and Social Integration: Skills and Knowledge in Life-long Learning in 2003. A component of this grant included participation of 20 MSU rising seniors in an externship program at URHCS in the summers of 2004 and 2005, which was patterned after a pilot externship program that was funded by the hospital in 2003. VC received two NIGP grants in 2003 that supported an externship program held at URHCS. URHCS participated in the Nursing and Allied Health Grant, Putting Prevention into Practice in Specialty Populations written by MSU and funded by THECB in October, 2000. Finally, VC and URHCS work closely together on Skills Development Fund grants that pay tuition and fees for URHCS employees to attend VC nursing and allied health programs. The collaboration inherent in these projects has demonstrated that these organizations will be able to work together to plan, implement, evaluate, and sustain the proposed project.

Institutional Commitment

MSU and the two uncompensated partners, URHCS and VC, will each provide sufficient resources to leverage the work of this project through matching contributions of money, space, equipment and in-kind workload contributions. They are committed to continuation of the project upon conclusion of the grant program.

The Wilson School of Nursing at MSU includes a generic baccalaureate nursing program, a RN to BSN, a RN to MSN, and a traditional MSN program. Strong recruitment efforts have resulted in 142 students being admitted to the junior class of the generic program, 100 of who are progressing to clinical courses in the fall of 2004. This is an increase of 66% over the previous year. Student interest in the generic program remains higher than it has been in previous years, so with the implementation of the proposed project, a further increase of 20 students per year during 2005 and 2006 is realistic. The Wilson School of Nursing (SON) is a part of the College of Health Sciences and Human Services (COHSHS) which also offers allied health programs, including entry level programs for radiographers and respiratory therapists, and a newly developed radiological assistant program. Students in all of these programs must have their competencies validated before they can practice in a clinical setting and many of these students are hired by URHCS following graduation.

The Wilson SON will relocate portions of the current skills laboratory to the new simulation center. MSU will contribute eight patient suites of furniture, including electric hospital beds, mattresses, over-bed tables, and bed side

cabinets to furnish the center. Frequent collaboration among center staff and nursing faculty will be required, and to coordinate course content and competency modules as well as to develop simulation scenarios, 5 percent of the MSU and VC course coordinators' time will be dedicated to the project as an in-kind contribution. The hospital has agreed to dedicate 11,000 square feet of space and to renovate the space for the regional simulation center. URHCS will also provide utilities, including telephone service for six telephones, electricity, and water. They will designate a portion of the funds they receive from the Children's Miracle Network charity to purchase clinical simulation equipment relevant to women and children's care.

Partnerships

United Regional Health Care System, a 359 bed hospital, is the major medical center in the north central Texas region and is working toward Magnet status recognition for their nursing service from the American Nurses Credentialing Center. URHCS serves as a clinical site for MSU's SON, Radiologic Science Program, and Respiratory Care Program, as well as for the VC nursing and allied health programs. URHCS has consistently worked with both nursing programs to support innovative approaches to educational programs.

Vernon College, a rural community college that serves a 12 county service area in north central Texas, offers an Associate Degree Nursing Program that provides an avenue for articulation and upward mobility in nursing education, promotes excellence in professional nursing, and supplies the north central Texas area with qualified registered nurses. Enrollment for VC is approximately 2,700, and admissions to the ADN program had previously been capped at 60 each fall. The nursing programs at VC and MSU are collaborative, having shared clinical space at URHCS for the duration of the programs' existence.

Wichita Falls is the home of Sheppard Air Force Base (SAFB), which includes the 82nd Medical Training Group. The Training Group provides allied health education for Air Force, Army, and Navy personnel. The Training Group has used moderate fidelity simulation models in their orientation program for new graduate nurses. The Chief Nurse Executive of the 82nd Medical Group will provide 30 hours of consultation regarding development of clinical scenarios and the creation of the "competency transcripts". She is particularly well qualified to provide this consultation, as it was under her direction that Majors Eaves and Flagg implemented the simulation unit at SAFB and conducted a qualitative evaluation of the simulation experience (Eaves & Flagg, 2001).

Methodology

Upon notification of funding, MSU, VC, and URHCS will form a consortium that will be known as the North

Central Texas Health Care (NCTHC) Consortium. It is through this consortium that the regional interdisciplinary simulation center will be developed and administered. The NCTHC Consortium will be governed by a seven member board of directors, including:

- a. three members representing URHCS, including the Vice President of Patient Care Services, the Chief Nursing Officer, and the Director of Education;
- b. two members representing MSU, including the Dean of the College of Health Sciences and Human Services and the Chair of the Wilson SON; and
- c. two members representing VC, including the Dean of the Health Sciences Division and a senior faculty member.

The board will develop policies for the regional simulation center and provide administrative supervision to the director of the simulation center.

The consortium board will begin staffing the center immediately by hiring a master's prepared nurse to be the director of the center. The director will hold adjunct faculty status at MSU and VC, and will be responsible for the daily operation of the Center, including hiring and supervising all staff, coordinating competency education and evaluation for MSU students, VC students, and the URHCS nursing staff. It is estimated that this position will be comprised of 30 percent administration and 70 percent competency education and validation.

Four nurses who hold a minimum of the Bachelor of Science degree in nursing (BSN) and who have a strong clinical background with excellent assessment and clinical skills will be employed to provide education and competency validation. The Director of the Regional Simulation Center, the four BSN staff members, and the technician, as well as appropriate faculty from MSU and VC will travel to Gatesville to receive training on the patient simulation equipment. Because the role of the BSN staff is conceptualized as that of a preceptor, they will be expected to complete the MSU on-line preceptor-training program prior to the opening of the Center in January 2005. The center director will also complete this course to prepare for supervision of the staff. Each of the four BSN nurses will receive a MSU sponsored scholarship to enroll in the four nursing education courses. The center director may also take these courses if he or she has no formal preparation in teaching or equivalent experience.

The director and staff, as MSU employees, will be evaluated according to the university evaluation time frame. The Director, as an adjunct faculty, will be evaluated every October. The remainder of the staff will be evaluated

annually on the anniversary of their employment. All evaluations will be based on job descriptions drafted by Drs. Sportsman and Garrison and approved by the NCTHC Consortium.

The director will oversee equipment acquisition for the center, including Laerdal patient simulators and sufficient equipment and supplies for students to perform physical assessment and clinical/technical skills. Four of the manikins will be Laerdal™ Sim-Man™ models that are high-fidelity, meaning they approximate the same responses elicited in humans, a capacity derived from software that allows faculty to program responses to interventions. These mannequins have a functioning mouth and airway; a chest wall that expands and relaxes upon inspiration and expiration; programmable heart, lung, and bowel sounds; real-time displays of electrocardiogram; pulse oximetry; and arterial pressures (venous, central, arterial, pulmonary); and allow insertion of endotracheal and chest tubes, intravenous cannulae, and bladder catheters. In addition, modules will be added that simulate care of patients with traumatic injuries and wounds. Appendix A describes the specific equipment to be purchased as soon as notification of grant approval is received.

In November of 2004, MSU and VC faculty will each identify competencies consistent with their curriculum and the Differentiated Entry Level Competencies (DELCS) that students are expected to master each semester. The Board of Directors of the NCTHC Consortium will appoint a Competency Committee composed of nurses representing URHCS, MSU, and VC which will be chaired by Dr. Garrison. This committee will be responsible for developing evidenced-based criteria for validation of the selected competencies.

Faculty in each course, in collaboration with the center staff and the SAFB consultant, will develop clinical scenarios to assist students with integration of skills and clinical decision making specific to the course of study and the level of student involved (ADN or BSN). The scenarios will be programmed into the clinical simulation equipment by center staff. Prior to the beginning of each semester, the Competency Committee will meet with the director to identify the competencies to be taught in the center and prepare the schedule for the semester.

Beginning January 2005, the center will be open from 9 AM to 9 PM. Monday through Friday. Two staff members will work from 8 AM to 5 PM, one will work 10 AM to 7 PM, and two will work from 1 PM to 9 PM. A clerical staff member will be available from 8 AM to 5PM, and will be responsible for scheduling appointments, performing clerical tasks, ordering supplies and equipment, entering data for key elements critical to the evaluation of the grant, and other related duties. A computer technician will work 45% time to maintain the equipment.

Center staff will teach cognitive and psychomotor skills throughout the semester, as designated to support the

learning objectives of the related courses for MSU and VC. Course leaders will assign students to attend these educational sessions in small groups, and students will be required to attend within the designated time frame. The educational sessions will be repeated at least five times during various hours to insure convenience for the students. Students will make an appointment with center staff to demonstrate required competencies. Upon satisfactory demonstration of the competency, center staff will document this accomplishment on the student's "competency transcript". Students will retain a copy of their transcript throughout their course of study. In addition, a Microsoft Access data base will be developed to maintain permanent records within the center that will be available to students, faculty, and staff.

The high-fidelity patient simulation equipment requested as part of this grant will improve students' ability to function as a provider of care as defined by the Texas Differentiated Entry Level Competencies (DELCS). Table 2 below outlines specific components of entry level competencies, which will be strengthened as a result of the use of the simulation center.

Table 2: Selected Differentiated Educational Level Competencies Strengthened by Simulation Center.

Provider of Care DELCS: Diploma/Associate Degree Graduates	Provider of Care DELCS: Baccalaureate Graduates
Determine the health status and health needs of individual clients, based upon interpretation of health data.	Determine the health status and health needs of individual clients, based on expanded interpretation of health-related data.
Evaluate individual clients' responses and outcomes to therapeutic interventions.	Evaluate individual clients' responses and outcomes to therapeutic interventions.
Use critical thinking approach to analyze clinical data and current literature as a basis for decision making in nursing practice.	Use an evidence-based analytical approach as the basis for decision-making in practice.

The high-fidelity patient simulation equipment will allow both ADN and BSN students to practice assessment of possible patient physiological states through programming the equipment for various clinical scenarios. Using this technology, students will also be able to perfect techniques needed for therapeutic interventions and evaluate their efficacy in selected patient situations.

There are some differences in the outcomes expected of the Associate Degree and Baccalaureate graduates. According to the Board of Nurse Examiners for the State of Texas, the DELCS provide a progressive framework for explaining the differences in the competencies of the two types of graduates. For example, like the ADN graduate, BSN

graduates must use critical thinking to analyze clinical data and current literature as a basis for decision making. In addition, they must also use an evidence-based approach in their decision-making. The MSU and VC faculty in each course will be responsible for developing specific clinical scenarios for their classes that support student achievement of various competencies. As a result, some of the clinical scenarios will be the same for both groups of students; in others, the BSN faculty will develop scenarios that are more complex, requiring students to use expanded interpretation of health related data and evidenced-base literature to make clinical decisions.

When students graduate from either VC or MSU, their competency in required skills, procedures, and clinical decision making processes will be documented via the “competency transcript”. The purpose of the competency transcript is to communicate to employers the level of competency in defined psychomotor and cognitive skills achieved by new graduates, as well as the range of clinical scenarios in which the skills were successfully applied. For example, through review of the transcript, the employer will be able to determine that the new nurse has successfully inserted a nasogastric tube in a) an alert, cooperative patient, b) a comatose patient, and c) in a patient with active gastric bleeding. The transcript will provide the date when the competence was validated and the evaluator’s signature. An additional section can be checked to document if the new nurse has performed the skill in an actual clinical situation. The performance standard for each skill will be the minimal competence expected of a new graduate according to the Differentiated Entry Level Competencies established by the Board of Nurse Examiners of the State of Texas.

The Competency Committee will be responsible for the overall development of the competency transcript. Faculty members in each course will identify psychomotor and cognitive skills to be taught during their course and the clinical scenarios where the skills should be applied. Prior to each semester the course is being taught for the first time, this list will be forwarded to the director of the simulation center and the Competency Committee. This group will come to consensus regarding the performance standards for each skill through discussion of standards previously used by the two nursing programs and the hospital, and related evidenced-based literature. The performance standards upon which the competency transcript is based will be written to form the NCTHC Regional Simulation Center Performance Standards. This document will be available to employers of graduates and can serve, along with the actual competency transcript, as one of the deliverables of the project.

VC and MSU graduates hired by URHCS will not be required to validate their competency in the areas documented on the “competency transcript” during hospital orientation. This will reduce the time allocated to

competency validation from four days to one, thus saving 75 percent of the time typically required for orientation, expediting entry into practice. VC students who enroll in the MSU RN to BSN program will be exempt from validating their competencies in physical assessment when they enroll in NURS 3303 Health Assessment at MSU. Graduates who are employed in other clinical settings or locations will also be able to provide their employer with copies of their competency transcripts.

Each of the Project Co-Directors will spend 15% of their time in the implementation of the proposed project. Dr. Sportsman will be responsible for supervision of the research components (model testing, program evaluation and cost-effectiveness analysis), financial oversight, and overall collaboration among the partners. She will chair the NCTHC Consortium and the Research Committee. Dr Garrison will devote time to operational issues, such as supervision of the regional simulation center staff, and coordination of the MSU and VC faculty interaction with the center. She will chair the Competency Committee. She will also be responsible for the purchase of all equipment and will work with a URHCS representative to coordinate the renovation of the physical facility.

Use of Regional Simulation Center in Allied Health Curricula

During the third year of the proposed project, in the fall of 2006, selected allied health students from MSU (respiratory care, radiologic technologist and assistant, and athletic training students) and VC (LVN and EMS students) will begin to use the center. Beginning in January of 2006, the project co-directors and the center director will meet with appropriate representatives of the allied health programs to discuss the nursing competencies being validated in the Center. The allied health program representatives will determine which of these competencies can appropriately be used in their curriculum. Based on this discussion, a schedule of use of the center for these programs will be developed, along with identification of the resources necessary to expand the competency validation for these groups. It is likely that additional staff time will be required, and the institution whose allied health students use the center will contribute the necessary resources.

The process of developing discipline-specific competency transcripts and appropriate clinical scenarios will follow the pattern established for nursing, including the development of an oversight committee made up of hospital and university/college representatives in allied health. It is hoped that this process will define the similarities and differences in the psycho-motor and cognitive skills used by nurses and other allied health professionals. Such findings could support increased interdisciplinary education.

Continuation of the Simulation Center Beyond the Grant Period

The partners in this grant have made a commitment to continue to fund the center beyond August, 2007. The simulation center will be a valuable resource to MSU, VC, and URHCS throughout the grant period, and it is envisioned to become a valuable resource to other health care organizations and interdisciplinary groups in the region. At the beginning of the third year of the project, selected MSU and VC allied health programs will begin to use the center. At the same time, allied health professionals employed at URHCS will have their competencies evaluated in the center. Peteani (2004) presents a business case for contracting with other agencies as a supplier of clinical competency validation for other health care organizations. There are ten acute care and rehabilitation hospitals within a 45-minute drive of the center, and these facilities are required to validate the clinical competencies of their nursing and allied health staff on an annual basis. The Peteani model can be used to market the simulation center to these agencies to meet those requirements. In addition, the Chief Nurse Executive of the 82nd Medical Group at SAFB, the physician residency group, and RN re-entry programs offered at VC and MSU have indicated interest in gaining access to the center for skills validation. There is no doubt that this venture can be sustained, and that it will develop into a rich, interdisciplinary learning environment where nurses can work in concert with physicians and allied health professionals in simulated patient care situations that mirror reality.

Budget Justification

The total cost of the proposed project is \$1,509,111 which includes \$1,272,410 in direct costs, and \$236,701 (18.6%) in permissible matching donations. There are additional contributions totaling \$1,127,876, including donated space, equipment, utilities, and furniture that are not permissible according to the budget guidelines. These contributions, however, are significant and demonstrate the partners' desire to bring this innovative, regional simulation center to fruition.

Personnel Budget

The personnel budget includes: 1) the center director, 2) four nurse educators, 3) one clerical staff member, 4) a 0.45 FTE computer technician, fifteen percent of one of the co-directors of the project, and ten percent for a faculty member to serve as the research coordinator. Fringe benefits for employees are calculated at 28 percent of their annual salaries, with the exception of the computer technician whose part time position receives no benefits. Total personnel costs are \$1,057,453.

The Director of the Regional Simulation Center, a master's prepared nurse, will earn in salary and benefits \$62,122 (year one), and \$74,547 for years two and three. The four RN educators will earn a total of \$195,262 for year

one and \$234,291 for years two and three. One FTE clerical staff will earn a total of \$18,598 for year one and \$22,316 for years two and three. The computer technician will work .45 FTE, for a total of \$17,160 for year one and \$20,592 in years two and three, without benefits during the project. Both of the co-directors of the project will devote 15% of their time to the project. Fifteen percent of one of the co-director's time will be \$11,843 in year one and \$14, 211 in years two and three. A MSU nursing faculty member will serve as the coordinator for the research component of the project, contributing 10 % time during the grant period, for a total of \$6,044 for year one and \$7,253 for years two and three.

Personnel Travel

Laerdal, maker of the simulation equipment, offers training in Gatesville, Texas. In November and December of 2004, the director of the center, the four RN educators, the computer technician, the competency committee, the Director of Education at URHCS, and the co-project directors will travel in MSU vehicles to Gatesville for the two-day-long training sessions. Mileage between Wichita Falls and Gatesville is approximately 250 miles, or 1,000 miles for two trips. Gasoline cost will be approximately \$300. Per Diem expenses are \$30/day. Two-day trips for 14 people will be \$840 in per diem expense. Lodging will be provided by Laerdal. Total expenses for initial training on the mannequins will be \$1,140 in year one. Two hundred and fifty dollars annually will be allocated for travel to Austin to meet with THECB staff each year.

Three presentations regarding outcomes of the proposed project are planned, including presentations at a nurse educator conference, a nursing research conference, and an allied health conference. In year two, \$1,500 will be allocated for that purpose and \$3,000 in year three. The total cost for personnel travel is \$6,390.

Capital Equipment Budget

Proposed capital equipment purchases include the SimMan™ Patient Simulator, SimBaby™, and Virtual IV™, as well as related equipment from Laerdal™ that will introduce students to a variety of health assessment and patient care skills. Appendix A provides a list of the specific equipment to be purchased. The total cost for this equipment is \$224,399 (including \$14,250 for a two year extended warranty on the SimMan™, SimBaby™ and Virtual IV™ equipment). In addition to computers necessary for the patient simulation equipment, two computers and printers will be purchased to support the clerical staff and the Director of the Center. The total request for capital equipment is \$185,767. Capital equipment costs are 17.6% of the total grant request.

Other Direct Costs

Other direct costs for the project include supplies, as well as lease of a copier. Expendable supplies for the center will include patient care and clerical supplies. The initial set-up expenses will be covered through a matching contribution; using funds previously donated to MSU by URHCS (see the next section for detail). Five thousand dollars

annually is budgeted for replacement supplies for the second and third year of the project. A copy machine for the center will be leased at a cost of \$2,400

annually. Twenty-five hundred dollars is budgeted for the external evaluation consultant for year one, \$1,000 for year two, and \$2,500 for year three. The total of other direct costs is \$22,800.

Matching Funds for the Three Year Grant Period

The partners in this endeavor are each making substantive matching contributions to this project, thereby emphasizing their commitment to implementation of a regional simulation center in north central Texas. The permissible matching funds are \$69,625 in year one, \$81,900 in year two, and \$85,176 and three, for a total of \$236,701.

United Regional Health Care System

Personnel: URHCS has donated the services of a grant development consultant. The value of these services is calculated at \$50/hour for 20 hours of consultation for a total of \$1,000. The hospital has made a commitment to donate 75 percent of the services of the Director of Education to coordinate competency evaluation from the hospital's perspective and to donate competency evaluation services to the simulation center. In addition, 50 percent of the Critical Care Educator's time is being donated to the project to develop critical care competency evaluation scenarios and strategies. The value of these donated services is reflected in Table 3.

Position	Donated Salary AY 2004-05	Donated Salary AY 2005-06	Donated Salary AY 2006-07
Director of Education	\$40,625	\$50,700	\$52,728
Critical Care Educator	25,000	31,200	32,448
Total	\$65,625	\$81,900	\$85,176

Table3

Equipment: The hospital also intends to contribute a portion of their allocation from the Children's Miracle Network charity to purchase patient simulation equipment related to the care of women and children. The cost of this equipment is \$38,632. A fax machine will be purchased (\$170) by URHCS and donated to the center. These costs are not included in the matching funds per grant instructions.

Physical Plant Allocations: URHCS has agreed to allocate 11,000 square feet of renovated space in their educational facility. At \$100 per square foot, this represents an in-kind contribution of \$1,100,000. Utilities (heat, air, telephones, and access to the hospital computer network) are being donated, and are estimated at a total of \$6,000. These costs are

not included in the matching funds per grant instructions.

Midwestern State University

URHSC and MSU will contribute \$11,000 from funds previously donated to MSU by the hospital to stock the regional simulation center with patient care supplies. Five percent of the salaries of the five MSU course coordinators for the courses using the regional simulation center will be contributed in-kind during the 34 months of the project. This includes \$11,770 for year one and \$14,125 for years 2 and 3 as in-kind contributions. Fifteen percent of one of the project co-directors' time will be contributed during the grant. The salary costs include \$13,074 for year one and \$15,689 for years 2 and 3. These costs are not included in the matching funds per grant instructions.

Vernon College

VC will contribute 5 percent of three coordinators of their clinical courses to collaborate on the development of the competency transcript and competency validation scenarios. The total costs of these services are \$5,758 for year one and \$6,910 for years 2 and 3, although these costs are not included in the matching funds per grant instructions.

Sheppard Air Force Base

The consultative services of the Chief Nurse Executive will be donated to assist with the development of the “competency transcripts”. She will contribute her expertise from previous moderate fidelity simulation experiences in the 82nd Medical Group at Sheppard Air Force Base. The in-kind contribution for 30 hours of consultation at a rate of \$100 per hour totals \$3,000.

Research

The use of clinical simulation in health professions education, particularly medicine, is well documented in the literature. Advantages of the use of clinical simulation have been identified, including presenting serious and/or uncommon situations, learning in a self-paced manner, developing higher order thinking skills, allowing student to err without repercussions to learner or patient, providing immediate feedback, and reinforcing content across the curricula. Reported disadvantages include lack of realism in the simulation experiences and patient responses, as well as the expense of the high fidelity computer-based simulators. However, there have been few quantitative studies that focus on the positive or negative effects of simulation relative to knowledge acquisition and performance of psychomotor skills, particularly when sophisticated high-fidelity simulators are used (Ravert, 2002).

Ravert (2002) reviewed quantitative studies related to computer-based simulation and health care education to determine the effect of simulation on education and learning. A total of 513 references in the literature were retrieved,

but only 9 quantitative studies met the defined inclusion data. Five studies were set in medical schools, two involved nursing inservice education in hospitals, and two were set in nursing schools. None of the settings used high-fidelity simulation. Seventy-five percent of these studies showed positive effects of computer-based simulation, but in most cases, the reliability and validity of the evaluation instruments were not documented.

In 2004, Feingold, Calaluca, and Kallen evaluated baccalaureate student / faculty member perceptions regarding the Laerdal SimMan Universal Patient Simulator in a clinical scenario. Participants were surveyed about the reality of the simulations, the pace and flow of the clinical simulation, the ability to transfer skills learned to actual clinical settings, and the value of the simulated clinical experiences. Faculty were surveyed regarding the resources required for effective use of simulated experiences. The majority of the students and faculty members identified simulations as realistic and valuable. However, only 50% of the students agreed that skills learned in the clinical simulation would transfer to a real clinical setting, compared to 100% of the faculty. Faculty members reported that implementing the simulated clinical scenario required additional time and resources (Feingold, et. al, 2004).

Given the dearth of research evaluating the effectiveness of the use of high fidelity clinical simulation equipment, three research emphases are planned for the proposed project. These include: a) replication of the Baramee and Blegen (2003) Model of Perceived Clinical Competence, b) program evaluation, and c) cost-effective analysis of the project. A Research Committee will be appointed to guide the research processes of the grant. This committee will be composed of project co-directors, research coordinator, selected representatives of the Consortium, and a graduate student and will be chaired by Dr. Sportsman.

Replication of the Baramee and Blegen Model of Perceived Clinical Competence

Baramee and Blegen (2003) developed a model to explain variables hypothesized to affect new graduates' perception of clinical competence. In this model, input variables included a health care provider in the student's family, prior health care experience, the type of nursing school attended, and the students' "hardiness". Process variables included student effort, the clinical learning environment, and faculty-student relationships. Outcome variables were conceptualized to be student grade point average and perception of clinical competency. Baramee and Blegen (2003) determined that students' effort, perception of clinical learning environment, and program grade point average had a direct effect on perception of clinical competence. Their model explained 8-12% of the variance of the subscales of clinical competence.

The goal of this component of the research plan is to test the causal model developed by Baramee and Blegen

(2003). This research is based on the assumption that increased opportunity to validate one's competence in a variety of situations will increase the student's perception of overall competence. The related research question is, "What are the relationships among variables hypothesized to affect new nursing graduate's perceptions of clinical competency?" Six surveys will be used to collect study data, including the Clinical Learning Environment Scale (CLE), the Clinical Competence Appraisal Scale (CCAS), the Personal View Survey (PVSII-R), the Institutional Integration Scale (IIS) and the Learning and Study Strategies Inventory (LASSI). The instruments are detailed in Appendix B. The effect of study variables on student perception of clinical competency will be examined through the use of path analysis.

Upon notification of funding, permission to conduct the study will be requested from the MSU Human Subjects Review Committee. Each of the six inventories will be administered to MSU and VC students immediately prior to graduation in May of 2005, 2006 and 2007. Demographic data will be analyzed using descriptive statistics. Data from the six surveys will be correlated using path analysis to support or challenge the Baramee and Blegen (2003) model of graduates' perceptions of clinical competence.

Program Evaluation

The second research question for the proposed project is: "Does participation in the regional simulation center increase the students' perception of their clinical competency?" In January 2005, MSU and VC students who have finished their basic/fundamental course in the fall of 2004, will complete the Clinical Competence Assessment Scale (CCSA). At this time, these students will not have participated in any activity in the regional simulation center, and so will serve as the control group. In January, 2006, and 2007, students at the same course level will also complete the CCSA. The 2006 students will serve as the "new intervention group", as they will have been the first group of students to participate in the simulation center and will have experienced the developmental issues involved with a new project. The 2007 students will serve as the "established intervention group", as the protocols for using the simulation center should be clarified by the time they participate. The summed score of each of these groups will be compared using Analysis of Variance (ANOVA).

A stratified, probability sample of these three groups of students after their basic/fundamental experience will form a focus group, for the purpose of identifying themes related to perceived clinical competence. Questions posed to the group will explore opinions about the reality of the simulations, the pace and flow of the clinical simulation, the ability to transfer skills learned in actual clinical settings and the value of the simulated clinical experiences, as suggested by the Feingold, et. al. (2004) study.

As part of data collection for replication of the Barramee and Blegen (2003) model, students will again complete the CCSA just prior to their graduation. Summed scores from the 2005, 2006 and 2007 graduates will again be compared using ANOVA; the 2005 group will serve as the control group. A stratified, probability sample will again be selected to participate in a focus group. Again, themes related to perceived clinical competence will be identified.

Cost-effectiveness Analysis

The third research emphasis of the project is a cost-effectiveness analysis. This analysis will provide important information for other schools that might wish to replicate this project. Cost-effectiveness analysis will be used to compare the cost of school/hospital-specific competency education and validation programs to the cost of the regional simulation center in relation to the number of students and staff served. The first step in the analysis will be to identify ingredients necessary for clinical simulation education, including staffing, equipment, and facilities costs. Secondly, the parameters for measuring the cost of each ingredient must be defined. Both steps will be completed in January of 2005. During the spring semester the actual costs associated with school/hospital specific competency education and validation, using January to December, 2004 financial data from MSU, VC, and URHCS, will be completed. The number of students/staff participating in clinical education/validation in the three labs will also be determined. Analysis of costs and participants in the regional simulation center from January to December, 2005 and January-December, 2006 will be determined using the same protocol. In the spring of 2007, the cost effectiveness ratio for each year will be compared. This comparison will help determine which program provides a given level of effectiveness at the lowest cost or, conversely, which program provides the highest level of effectiveness for a given cost (Levin & McEwan, 2000). One of the project co-directors, in collaboration with a faculty member in the MSU Health and Public Administration program and a MSN graduate student, will perform this analysis.

External Evaluation Consultant

This consultant will be responsible for evaluating predictive outcome measures. The ideal candidate should be a doctorally-prepared nurse with experience in nursing education, program evaluation, and research, particularly in path analysis. He or she must be familiar with factors contributing to the nursing shortage. The project co-directors will submit names of candidates to the Texas Higher Education Coordinating Board (THECB) for approval. The contract between MSU and the consultant will outline specific outcomes of the consultation process which are outlined in Appendix C. This contract will be drafted in collaboration with THECB representatives.

The external consultant will make an initial visit to MSU during the third week in January, 2005, or as soon thereafter as possible. He or she will also conduct an onsite evaluation of the implementation of the Simulation Center in August of 2005 and will submit a report to the THECB before September 1, 2005. He or she will also evaluate the

project in August of 2006 and 2007 and submit findings to the THECB in September 2006 and 2007. Appendix C details the areas to be included in the consultant's analysis.

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Texas Nurses Association Nursing Education Redesign Task Force Final Report July, 22/2004

**Nursing Innovation Grant Program – Category D
Timeline**

Project #	Institution and Project Title Midwestern State University High Fidelity Clinical Simulation: A Regional Collaborative for Increasing Nursing Enrollment and Accelerating the Orientation of New Graduates	
Dates	Activity and Method of Delivery (Person Responsible)	Outcome(s)
I. Preparation – October through December 23, 2004		
Upon notification of grant award	Submit proposed research to MSU Human Subjects Review committee and URHCS Institutional Review Board. (Dr. Susan Sportsman)	Permission to conduct research received
October 22, 2004	Submit revised grant proposal. (Drs. Sportsman & Garrison)	Finalized grant proposal accepted by THECB
October 22, 2004	External consultant selected (Drs. Sportsman & Garrison)	External consultant accepted by THECB
October 28, 2004	Competency Committee appointed, including course coordinators from MSU/VC Faculty, Center Director, URHCS Nurse Educators, and Col. Kathy Roberts. Group to be chaired by Dr. Garrison. (Dr. Garrison in collaboration with the NCTHC Consortium)	Competency Committee in place to begin development of Competency Transcripts.
October 28, 2004	Research Committee appointed, including grant Co-Directors, selected Consortium members, Research Coordinator, and Graduate Assistant. Group to be chaired by Dr. Sportsman. (Dr. Sportsman in collaboration with the NCTHC Consortium)	Research Committee in place to guide development of the research program.
Oct, 28, 2004 Ongoing through Nov. 15, 2004	Initial meeting of NCTHC Consortium. (Subsequent meetings on a monthly basis, <ol style="list-style-type: none"> 1. Recruiting plan for Director, RSC developed. 2. Competency Committee members selected and roles and responsibilities defined. 3. Job Description for Center staff developed. 4. Search process for center staff defined. (Dr. Garrison) 	Recruitment for qualified staff begins, culminating in employment of qualified individuals.
October 28 to November 5, 2004	Hire Regional Simulation Center Director (Dr. Sportsman)	Simulation Center Director who meets position description hired.
November 1 - 5, 2004	Order Laerdal Simulation Equipment (Dr. Garrison)	All equipment ordered with delivery date from January 1-10.
November 5 – 10, 2004	Schedule visit for Simulation Center physical plant renovation consultant from Laerdal (Dr. Garrison).	Renovation plans finalized.
November 5- 24, 2004	Hired Center Staff (4 BSN Nurse Educators, 1 Clerical Staff, and 0.45 FTE Computer Technician) (Dr. Sportsman)	Staff who meet position description requirements in place.
Not later than November 10	Schedule training for MSU/VC Faculty, URHCS Educators, and Center Staff at Gatesville, Texas, site of the Laerdal training facility.(Dr. Garrison)	All Center Staff, MSU/VC Course Coordinators, and Dr. Garrison scheduled to attend, reservations made, and vehicles for travel reserved.

November 21 - 23	Schedule visit with external consultant for the third week in January, 2005 (Dr. Sportsman)	Preparations made for consultant's visit, including meeting times with Consortium members, Center Staff, Course Coordinators; travel plans; and accommodations.
October 28 through December 15, 2004	Competency Committee identifies competencies to be taught/validated at Simulation Center. Faculty members identify semesters in which particular competencies will be taught, and specific schedule for spring, 2005 established. (Dr. Garrison)	Competencies scheduled according to the semesters in which they are taught.
October 28 through December 15, 2004	Competency Committee develops Competency Transcripts. Two Competency Transcripts will be developed, one for the Associate Degree Program and one for the Baccalaureate Program, so as to reflect the Differentiated Entry Level Competencies. (Dr. Garrison and Competency Committee)	Competency Transcripts complete and ready for implementation.
December, 2004	In two groups, Center Staff, MSU and VC faculty, and selected hospital staff travel to Gatesville TX to be trained on patient simulation equipment.	Staff oriented to simulation equipment.
December, 2004	Center Director and 4 BSN staff nurses complete the MSU On-line Preceptor Training program	Staff oriented to preceptor roles and responsibilities.
December 2004	Center staff prepare simulation center environment in preparation for the arrival of students enrolled in MSU and VC assessment classes, as well as MSU first medical surgical course and clinical decision making.	Simulation Center ready for use.
December,2004	MSU/VC faculty develop clinical scenarios for competencies in concert with course objectives and DELCs <i>Note: Development and revision of clinical scenarios is an ongoing process, but shall not be reflected continuously in the timeline.</i>	Simulation Center ready for use.
II. Initial Semester of Implementation - January through May, 2005		
January 18, 2005	Regional Simulation Center is open for student/staff use. Hours: M-F, 9 AM to 9 PM. (Dr. Garrison)	Simulation Center is operational.
January 18, 2005	BSN staff nurses enroll in at least one MSU Nurse Educator Course. <i>Note: Students will enroll in at least one course per semester until all four Nurse Educator Courses are completed. This shall not be continuously reflected in the timeline,.</i>	Simulation staff develops teaching expertise.
January, 2005	Cost Analysis Project Begins <ul style="list-style-type: none"> • Determine identifiers and specifications of costs of Simulation Center and school/hospital-specific labs. • Develop framework for establishing CE ratio. • Collect cost data regarding MSU/VC school-specific and hospital-specific competency education/evaluation costs using January-December, 2004 financial data. • Collect number of participants using school/hospital-specific labs for competency education and evaluation between January-December, 2004. (Dr. Sportsman) 	Identification of comparison costs and admission data.
January 21, 2005	Open House for the Regional Simulation Center	MSU/VC Faculty/Staff/Students, URHCS Employees visit Simulation Center.
January 18 – 23, 2005	Data collection for the Program Evaluation begins with administration of the CCAS to MSU/VC students.(Dr. Sportsman)	Baseline data collected for control group.

January 18 - 30, 2005	MSU and VC students give permission for results of competency validation to be transferred to respective schools throughout course of study. Students use the simulation center to learn assessment skills and to demonstrate competencies in management of complex clinical scenarios. Competency validation results of students transferred to schools at regular intervals. (Dr. Garrison)	Written permission in each student's file. Documentation of validation of competencies available in student files.
January 24 – 28, 2005	External consultant tours the Regional Simulation Center, meets with the NTRSC Consortium, the Competency Committee, and the Research Committee. (Drs. Sportsman/Garrison)	Begin process of evaluation accomplishment of grant goals and objectives.
February 1- 14, 2005	Competency Committee meets with center staff to schedule competencies to be taught for summer and fall semesters to allow for course scheduling a MSU/VC. (Dr. Garrison) <i>Note: This shall continue at the beginning of the second or third week of the fall and spring semesters for the duration of the grant period, but shall not be reflected continually in the timeline.</i>	Schedule prepared for summer and fall semester.
March and April, 2005	Competency Committee and Director, RSC meet on a monthly basis to review operation of the Center pertinent to competency evaluation, scheduling, and other issues to assure smooth operation. (Dr. Garrison) NCTHC Consortium Board meets on a monthly basis to review operation of RSC. (Dr. Sportsman) <i>Note: These meetings shall continue for the duration of the grant period, but shall not be reflected continuously in the timeline.</i>	Solutions developed for any identified problems.
May, 2005	Eight additional students at VC and twenty additional students at MSU shall be admitted into the program.	First complement of increased enrollment (28 students) accomplished.
May, 2005	Graduating seniors will be asked to complete the six inventories and demographic data sheet in order to test the causal model of perceived clinical competency (Dr. Sportsman). <i>Note: This data collection process will be done at this time in May, 2006 and May, 2007, but shall not be reflected continuously in the timeline.,</i>	Data collected to test causal model
May, 2005	Data from graduating seniors' responses to the CCSA will be summed to determine if participation in the regional simulation center increase students' perception of clinical competence/ (Dr. Sportsman) <i>Note: This data collection process will be done at this time in May 2006 and May 2007, but shall not be reflected continuously in the timeline.</i>	Data collected for control group to evaluate the impact of participation in the simulation center on students' perceived clinical competence.
May, 2005	Competency Committee shall prepare an end of semester evaluation of the effectiveness of the simulation experience. This activity will be repeated at the end of each academic semester for the duration of the grant, but will not be continuously reflected in the timeline. (Dr. Garrison) <i>Note: These meetings shall continue for the duration of the grant period, but shall not be reflected continually in the timeline.</i>	Report shall include: number of students evaluated, summary of problems encountered, recommendations for addressing problems, and summary of adapted clinical experience questionnaire.
III. Initial Evaluation - Summer 2005		

June, 2005	MSU assessment students' and VC transition students' competencies are assessed in the Simulation Center. (Dr. Garrison)	Competency assessment continues.
July/August, 2005	External Consultant conducts onsite evaluation of the Simulation Center. Meetings scheduled with the NCTHC Consortium, Competency Committee, and Research Committee. (Drs. Sportsman and Garrison)	Initial evaluation of the stand-alone component conducted, and consultant's report received by THECB on or before Sept. 1, 2005.
Upon receipt of the external consultant's report	Co-directors call NCTHC Consortium board meeting to review consultant report and evaluate ongoing implementation of RSC.	Implement recommendations from consultant's evaluation.
August 15 – 31, 2005	Preparation and submission of the 10-month status report. (Drs. Sportsman and Garrison)	Report received by THECB on or before Sept. 1, 2005.
August 31, 2005	Evaluate the amount of time required to orient MSU/VC graduates to URHCS. (Dr. Sportsman) <i>Note: This evaluation will be done each August, but shall not be reflected continually in the timeline,</i>	Evaluate the reduction in time required to orient new graduates to URHCS
IV. Extension of the Grant Agreement – September 1, 2005 through August 31, 2007		
September, 2005	Anticipated extension of the grant agreement.	
September, 2005	NCTHC Consortium Board plans for continuation of simulation center activities.	Report made to MSU and VC faculty and URHCS administration.
January, 2006	Administration of CCAS instrument to MSU/VC students having completed their basic/fundamental nursing course the previous fall. <i>Note: This instrument will be administered to MSU/VC students at the same level in 2007.</i>	Data collected for "new intervention" group in 2006 and "established intervention" group in 2007
January, 2006	Qualitative data collection regarding perception of clinical competence after participation in simulation center, using a stratified, probability sample of students completing their basic/fundamental nursing course via a focus group format. <i>Note: A replication of this focus group will be held at the same time in January, 2007</i>	Qualitative data collected to explicate quantitative data.
January, 2006	Collect cost data regarding operation of the regional simulation center using January-December, 2005 financial data. Collect number of participants using regional simulation center for competency education and evaluation between January-December, 2005. (Dr. Sportsman) <i>Note: Costs and participants will also be determined at this time in January, 2007 using January-December, 2007 data, but shall not be reflected continuously in the timeline.</i>	Determine cost-effectiveness ratio for regional simulation center.
January, 2007	Submit abstract regarding development/implementation of RSC to nursing education conference.	Present at nursing education conference
May 31, 2006	<u>Arrangements complete to include interdisciplinary faculty/students in regional simulation center</u>	Interdisciplinary education begun in center
May 31, 2006	Twenty-eight students admitted (2 nd cohort) 20 (MSU) 8 (VC)	Final increase in admission.
May, 2007	Submit abstract regarding evaluation research to a nursing research conference.	Present at a nursing research conference.
June-August 2007	Submit abstract regarding use of center by allied health students and professionals.	Present at allied health conference.
September 1 – 30,	Preparation and submission of the final narrative report. (Drs.	Final narrative report

2007	Sportsman and Garrison)	received by THECB on or prior to October 1, 2007.
November 1 – 30, 2007	Preparation and submission of the final financial statement. (Drs. Sportsman and Garrison; Valarie Maxwell, Director of Budget at MSU).	Final financial statement received by THECB on or prior to December 1, 2007.

Nursing Innovation Grant Program – Category D Budget

Project #	Institution and Project Title	
	Midwestern State University High Fidelity Clinical Simulation: A Regional Collaborative for Increasing Nursing Enrollment and Accelerating the Orientation of New Graduates	
		Three-Year Totals
A. Personnel <i>(show number of people in brackets)</i>		
1. (0.15) Project Director/Co-Project Director		<u>\$31,456</u>
2. (5.0) Other Project Faculty		<u>683,646</u>
3. (0.45) Other Professionals (technician, programmer, etc.)		<u>58,344</u>
4. (1.0) Secretarial - Clerical		<u>49,402</u>
5. (0.1) Other - Research Coordinator		<u>16,054</u>
*Includes an 0.45 FTE w/o benefits	<i>Subtotal - Salaries and Wages</i>	<u>*838,902</u>
	<i>Fringe Benefits (28 %) of \$814,035</i>	<u>218,551</u>
	<i>Total – Salaries, Wages, and Fringe Benefits</i>	<u>\$1,057,453</u>
B. Personnel Travel	<i>Total – Personnel Travel</i>	<u>6,390</u>
C. Capital Equipment	<i>Total - Capital Equipment</i>	<u>185,767</u>
D. Participant Costs	<i>Total – Participant Costs</i>	<u>0</u>
E. Other Direct Costs		
1. Materials, Supplies, and Non-Capital Equipment		<u>16,800</u>
2. Subcontracts with Partners/Consultant Services (External Consultant)		<u>6,000</u>
3. Other		
	<i>Total - Other Direct Costs</i>	<u>22,800</u>
F. TOTAL DIRECT COSTS For Three-Year Grant Period		<u>\$1,272,410</u>
G. Matching Funds For Three-Year Grant Period		<u>\$394,997</u>
<u>Project Director's Signature</u> (required only prior to funding) <u>Date</u>		
I hereby certify that I have read and agree to comply with all conditions of this grant and agree to return to the Coordinating Board any funds not expended in compliance with those conditions.		
<u>Institutional Representative's Signature</u> (required only prior to funding) <u>Date</u>		

**Innovation Grant Program – Category D
Budget Justification**

Project #	Institution and Project Title <p align="center">Midwestern State University High Fidelity Clinical Simulation: A Regional Collaborative for Increasing Nursing Enrollment and Accelerating the Orientation of New Graduates</p>		
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Budget Detail By Category	FY2005	FY2006	FY2007
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A. Personnel			
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• Project Co-Director 15%	\$11,843	\$14,211	\$14,211
15% of \$74,016 annually; salary:	9,252	11,102	11,102
28% Benefits	benefits: 2,591	3,109	3,109
• Director, Regional Simulation Center 1.0 FTE	\$62,122	\$74,547	\$74,547
\$58,240 annually; : salary:	48,533	58,240	58,240
28% Benefits	benefits: 13,589	16,307	16,307
• Staff RN/BSN Educators 4.0 FTE	\$195,262	\$234,291	\$234,291
\$45,760 annually salary:	152,553	183,040	183,040
28% Benefits	benefits: 42,709	51,251	51,251
• Clerical Staff 1.0 FTE	\$18,598	\$22,318	\$22,318
\$17,436 annually; salary:	14,530	17,436	17,436
28% Benefits	benefits: 4,068	4,882	4,882
• Computer Technician 0.45 FTE	\$17,160	\$20,592	\$20,592
45% of \$45,760 annually; 0% Benefits			
• Evaluation Coordinator-10%	\$6,044	\$7,253	\$7,253
10% of \$56,664; salary:	4,722	5,666	5,666
28% benefits	benefits: 1,322	1,587	1,587
<i>Personnel Total</i>	\$311,029	\$373,212	\$373,212

B. Personnel Travel			
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• Travel to Patient Simulation Training	\$1,140	\$ 0	\$ 0
Travel 1,000 miles in MSU vehicle, gasoline expense projected at \$300 Per diem of \$30/day X 2 days X 14 people =\$840			
• Travel to Present at 3 Conferences/Austin THECB	\$250	\$1,750	\$3,250
Projected conferences: Educator's Conference Summer 06 Southern Nursing Research Society Fall 06 Allied Health Conference Fall 06			
<i>Personnel Travel Totals</i>	\$1,390	\$1,750	\$3,250

Budget Detail By Category	FY2005	FY2006	FY2007
C. Capital Equipment			
• 2 computers and printers for Director or Clerical Staff Dell Desk-top Computers with Printers \$2,000 each	\$3,000	\$0	\$0
• Patient Simulation Mannequins and Related Equipment See appendix A for Equipment Detail	\$182,767	\$0	\$0
<i>Capital Equipment</i>	<u>\$185,767</u>	<u>\$ 0</u>	<u>\$ 0</u>
D. Participant Costs			
•	\$	\$	\$
<i>Participant Costs Totals</i>	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
E. Other Direct Costs			
• Office and Patient Care Expendable Supplies Annual office supplies: \$1,000; clinical supplies: \$4,000	\$0	\$5,000	\$5,000
• External Evaluator - Consultant \$50/hour for 50 hours	<u>\$2,500</u>	<u>\$1,000</u>	\$2,500
• Copier Rental Rate typically paid by MSU for copier rental	\$2,000	\$2,400	\$2,400
<i>Other Direct Costs Totals</i>	<u>\$4,500</u>	<u>\$8,400</u>	<u>\$9,900</u>
F. Total Direct Costs	<u>\$502,686</u>	<u>\$383,362</u>	<u>\$386,362</u>
G. Matching Funds			
• URHCS Director of Education (75%) Assumes 4% increase in years 2006 & 2007 Annual salary \$65,000 /	\$40,625	\$50,700	\$52,728
• URHCS Critical Care Educator (50%) Assumes 4% increase in years 2006 & 2007 Annual salary-\$60,000	\$25,000	\$31,200	\$32,448
• URHCS Grant Development Coordinator (20 hours) 20 hrs @\$50/hr	\$1,000		
• Consultant, Competency Evaluation/Patient Simulation Chief Nurse Executive 82 nd Medical Group, Sheppard AF Base 30 hours @\$100/hr.	\$3,000		
<i>Total Matching Funds</i>	<u>\$69,625</u>	<u>\$81,900</u>	<u>\$85,176</u>
Total Funding For Grant Project	<u>\$572,311</u>	<u>\$465,262</u>	<u>\$471,538</u>

**Nursing Innovation Grant Program – Category D
List of Deliverables**

Project #	Institution and Project Title Midwestern State University High Fidelity Clinical Simulation: A Regional Collaborative for Increasing Nursing Enrollment and Accelerating the Orientation of New Graduates
<u>Due Date</u>	<u>Outcomes/Products</u>
<u>October 31, 2004</u>	<u>Completed grant award process.</u>
<u>October 31, 2004</u>	<u>Organizational meeting of North Central Texas Health Care Consortium.</u>
<u>November 30, 2004</u>	<u>Signed contract with outside evaluator.</u>
November 30, 2004	Research study approved by the MSU Human Subjects Review Committee.
<u>December 31, 2004</u>	<u>Center staff hired and trained in the use of high fidelity manikins.</u>
<u>December 31, 2004</u>	<u>Participating faculty trained in the use of high fidelity manikins.</u>
January 17, 2005	Preparation of a regional interdisciplinary simulation center complete, fully equipped with “state-of-the art” patient simulation equipment.
<u>January 31, 2005</u>	<u>Feedback from outside consultant received.</u>
May 30, 2005	28 additional students enrolled; 20 at MSU and 8 at VC
August 31, 2005	Deliverables associated with the proposed “Stand-alone” project: <ul style="list-style-type: none"> • Documentation of criteria for competency validation of basic and advanced health care provider skills for nursing students and professionals developed for MSU/VC/URHCS use. • Development of <u>two “competency transcripts”, one each reflecting DELCs for BSN and ADN students</u> • Implementation of competency evaluation for four nursing courses, <u>including assessment, basic/fundamentals, medical surgical, and clinical decision making courses</u> • Submission of 10-month interim report to THECB staff • Receipt of report by outside evaluation consultant • Submission of the consultant’s report to THECB
<u>September 1, 2005</u>	<u>10-month status report to THECB</u>
May 31, 2006	Second cohort of 28 additional students enrolled; 20 at MSU and 8 at VC
<u>May 31, 2006</u>	<u>Arrangements complete to include interdisciplinary faculty/students in regional simulation center</u>
<u>October 1, 2006</u>	<u>Submission of additional status report to THECB</u>
August 31, 2007	Implementation of a regional interdisciplinary simulation center for nursing and selected allied health students and professionals. Documentation of an increase of 40 additional MSU nursing students and <u>16 VC students</u> at the end of the grant period, without the addition of new faculty or overloads for current faculty in related courses. Completion of a studies to (1) challenge or support the Baramée and Blegan (2003) model of perceived clinical competence; and (2) determine whether participation in a regional simulation center enhances students’ perceptions of clinical competence. Completion of a cost-effectiveness analysis comparing the cost of the regional simulation center to school-specific competence education/validation. <u>External consultant visit to evaluate outcomes.</u>
<u>October 1, 2007</u>	<u>Final narrative grant report to THECB</u>
<u>December 1, 2007</u>	<u>Final financial statement to THECB</u>

**Nursing Innovation Grant Program – Category D
Resume**

This is not a template but a placeholder. Project Director(s) resume(s) is added as "Form 8."

Capital Budget Detail: Patient Simulator Equipment to be Purchased			
Quantity	Description	Unit Price	Total
4	Laerdal SimMan Patient Simulator with Compressor	\$ 28,980.00	\$115,920.00
4	Wireless Headset	95.00	380.00
4	SimMan Nursing Modules	1,360.00	5,440.00
4	SimMan Trauma Modules	1,360.00	5,440.00
4	Extended warranty-2 years	6,000.00	6,000.00
1	Extended warranty-2 years	6,000.00	6,000.00
1	Nursing Anne Vital Sim Advanced	7,395.00	7,395.00
1	Fundus Pelvis	150.00	150.00
1	Nursing Kelly Vital Sim	6,470.00	6,470.00
2	Headset (remote mic) for use with SimMan and VitalSim Manikins	95.00	190.00
1	Extended Warranty-2 years	2,250.00	2,2612.00
4	Wound Care Models + carrying cases	354.00	1,416.00
4	Chester Chest + carrying cases	653.00	2,612.00
1	Intradermal Injector Simulator	150.00	150.00
4	IM Hip Simulator + carrying cases	660.00	2,640.00
2	Computers to run SimMan	1,476.00	2,952.00
	Total grant-funded equipment		\$185,815.00

Appendix B

Research Instruments	
Tool	Description
The Clinical Competence Appraisal Scale (CCAS)	assesses clinical competency. It is comprised of five subscales: planning/evaluation, interpersonal relationship, leadership/management, teaching, and psychomotor skills. Chronbach's alpha coefficients ranging from 0.81 to 0.91 have been reported (Baramée & Blegen, 2003)
The Personal View Survey (PVSIII-R)	measures hardiness. It consists of three subscales: commitment, control and challenge. The alpha coefficient has been reported to be 0.65 (Baramée & Blegen, 2003). Internal consistency has been reported ranging from 0.60-0.88 (Maddi & Khoshaba, 2001).
Clinical Learning Environment Scale (CLE)	measures student perceptions of their clinical experiences during school. It consists of five subscales: staff-student relationships, nurse manager commitment, patient relationships, interpersonal relationships, and student satisfaction. The reported alpha coefficient was 0.67 (Baramée & Blegen, 2003).
Institutional Integration Scale (IIS)	measures student perceptions of the student-faculty relationship. It includes five subscales: academic and intellectual development, peer-group interactions, interactions with faculty, faculty concern for student development and teaching, and institutional and goal commitment. The reported alpha coefficient was 0.65 (Baramée & Blegen, 2003).
Learning and Study Strategies Inventory (LASSI)	which measures student effort. It includes five subscales but in accordance with Baramée & Blegen's (2003) study items from two of the subscales will be administered: concentration/preparation and self-monitoring/ use of study strategies. The alpha coefficient for this study was 0.63 (Baramée & Blegen, 2003).
<p>Baramée, J. & Blegen, M.A. (2003). New graduate perception of clinical competence: testing a causal model. <i>International Journal of Nursing Studies</i>, 40(4), 389-399.</p> <p>Kramer, M. (1974). <i>Reality Shock: Why Nurses Leave Nursing</i>. St. Louis, MO: Mosby Year Book, Inc.</p> <p>Maddi, S.R. & Khoshaba, D.M. (2001). <i>Personal Views Survey (3rd revision)</i>, Newport Beach: Hardiness Institute, Inc.</p>	