

2007 Scholarship of Teaching Grants (STG) Application

Grant Application

Title of STG proposal: Infection Prevention Education for UTHSCSA Personnel

Project Director

Name: Pranavi Sreeramoju

Title: MD, MPH

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Collaborators

Name: Jennifer Peel

Title: PhD

Department & Division: Graduate Medical Education

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Campus phone number: 2105674431

Name: Mary Manwell-Jackson

Title: PhD

Department & Division: Academic Informatics Services

E-Mail address: manwell@uthscsa.edu

Campus phone number: 2105672814

Name: Jan E Patterson

Title: MD

Department & Division: Medicine

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Executive Summary

Discuss the educational problem and how your project will address the issue. Please reference the numbers and types of students the project will assist as well as the techniques used to evaluate the project. Be aware that the Executive Summary will be provided to *all* members of the Academic Center for Excellence in Teaching (ACET) Advisory Committee and will be used in the review process. *Please limit your summary to 200 words.*

While the existing method of providing education in infection prevention to UTHSCSA personnel, the physicians, medical students, as well as non-physicians may be adequate to meet the compliance requirements of regulatory agencies, there is a great need for better education regarding topics such as pandemic influenza, bioterrorism, seasonal influenza, hand hygiene, and preventable infections in the community as well as the workplace.

The investigators propose to develop an online education module that would be a 25-30 min. flash module that covers the most important topics in infection prevention based on case scenarios. Resources for further learning will be made available. The module would reside on the UTHSCSA online training system, known as the Knowledge Center (KC). The KC is fully functional, and ready to host education modules, send reminders automatically to trainees, and track completion.

UTHSCSA has several thousand physician and non-physician employees and students who will directly benefit from the education program. It will also be made available to other UT personnel.

Evaluation will be done with the tools for quality assurance for evaluation of all online courses, developed by Dr. Mary Manwell-Jackson, on quality of content, potential effectiveness as a teaching-learning tool and ease of use.

Total amount of funding requested: \$6,500.00

Budget Request

Item (<i>itemize each below</i>)	Funds Requested
Consumable supplies:	\$0.00
Equipment:	\$0.00
Hourly rate services (e.g. software programming): Flash Programming and testing: 100hrs at \$45/hr = \$4500 Narration: 5 hrs at \$200/hr = \$1000 Video Recording and editing: 10 hrs at \$100/hr = \$1000	\$6,500.00
Other expenses:	\$0.00
TOTAL (calculated)	\$6,500.00

Travel and equipment: Budget requests to support travel for presentations at meetings related to an STG project must be justified in the application. If the grant is funded, travel expenses may not exceed 10% of the total award. If the project budget includes funds for purchasing equipment, the applicant must document that such equipment is not available or accessible at UTHSCSA.

Proposal Review Criteria

Your application is expected to answer each of the six questions below. Please complete each section.

1. Definition of the problem

Define the instructional problem addressed by the project. Indicate how the proposal relates to students' needs, is innovative, and takes advantage of interdisciplinary collaboration. Discuss research literature related to the problem.

Current State of Infection Prevention Education at UTHSCSA: The current method of delivering education in infection prevention and control to UTHSCSA personnel needs to be standardized as well as improved. The physician faculty at UTHSCSA is required to complete a course on bloodborne pathogens, but they are not offered any education in topics that include hand hygiene, respiratory viruses including pandemic flu, bioterrorism-associated infections, and evidence-based measures to prevent healthcare-associated infections. The incoming residents and fellows are offered a 90-minute training in compliance and safety procedures that includes a few minutes devoted to infection control. The medical students have a one-hour lecture on Bloodborne pathogens and isolation precautions. The rest of the UTHSCSA personnel are offered education on Bloodborne pathogens if their laboratory work involves blood or body fluid exposure, but otherwise, they do not receive any formal education on other aspects of infection prevention.

The deficiency this project will address: While the current method of education as outlined above may be adequate to meet the requirements of regulatory bodies like the ACGME and JCAHO, it reveals a need for a uniform, standardized education in basic, important topics in infection prevention. The current project is designed to fill this gap.

Importance of bridging this deficiency:

It is important for all UT personnel to be aware of infection prevention issues like preparedness for pandemic flu including H5N1 (avian flu), hand hygiene, breaking the chain of transmission for contagious infections, evidence-based measures for prevention of healthcare-associated infections. Correct knowledge, attitudes, and practices regarding infection prevention practices protect oneself and others. Consumer interest in this area has been increasing, and so is the media coverage regarding drug-resistant organisms, hand hygiene, and pandemic flu. Many states in the country have passed legislation for mandatory public reporting of healthcare-associated infections by hospitals, and it is expected that Texas will pass a similar legislation in the near future. Infections acquired in the workplace provide opportunities for potential lawsuits. In a lawsuit, *Dr. Doe vs. Yale University* in 1998, the jury ordered the University to pay \$12.2 million to a former resident at Yale-New Haven hospital who contracted HIV from a needlestick 10 years earlier, stating that Yale had failed to train her properly. In a recent formal complaint by a visitor to the UTHSCSA campus, employees wearing personal protective equipment such as gowns and gloves in public places was cited. This course will help meet these educational needs at UTHSCSA.

How is this project innovative?:

While the individual concepts such as online delivery method, use of case scenarios, use of evaluation tools based on peer review process, and layering the intensity of information are among the relatively novel concepts recognized in the field of instructional technology, we feel that the innovation in this course is in the integration of all these concepts and using them to deliver education in infection prevention, particularly in the state of Texas.

Interdisciplinary Collaboration:

Development of this course involves close collaboration between the Department of Medicine, Graduate Medical Education, and Academic Informatics Services. During the peer review process of evaluating the course, experts from other disciplines including, but not limited to Pediatrics, Surgery, Safety will be included.

Literature review and Available Educational Products in Infection Prevention: Literature on the effectiveness of online learning systems in teaching patient safety is limited. There are published articles regarding online training for corporate settings(1,2), and training of public health nurses in Georgia(3). Use of online training systems to teach

infection prevention and control is not widespread. There are a few pre-packaged infection prevention and control education modules available commercially, which cost around \$8,000.00 to \$12,000.00. They vary in quality, and have the disadvantage of lacking institution-specific detail. Some universities and hospitals have the infection prevention education available on the local intranet. Currently, UTHSCSA has an online course on bloodborne pathogens, but not other infection prevention topics.

References:

- (1) Cost-effectiveness of online teacher training. *Open Learning* 2005 06/01/;20(2):131.
- (2) Terndrup T. Online bioterrorism continuing medical education: development and preliminary testing. *Acad. Emerg. Med.* 2005 01//;12(1):45-50.
- (3) Jakeway CC. Developing population health competencies among public health nurses in georgia. *Public Health Nursing* 2006;23(2):161-7.

2. Design of the project

Describe what is planned, how it will be done, and who will do the work. Specify time lines for the proposed project.

Description of the course: The course will have 10-15 case scenarios. Each scenario will reflect one important area of learning, and will begin with a scenario and a multiple choice question. Whether or not the question is answered correctly, there will be a concise paragraph containing 'must know' information, with links to 'nice to know' information, that in turn will have links to 'fun to know' or advanced information that will include references and resources for further reading based on individual preference.. If the initial question is answered incorrectly, the course-taker will have an opportunity to go back and attempt it again after review of the material. The 'must know' information should be adequate to answer the initial question. The learners can do the questions in any order they choose. UTHSCSA has local expertise in infectious diseases, infection control, hospital epidemiology, instructional technology and educational research, apart from all-round expertise in clinical areas like medicine, surgery and pediatrics. This project will draw upon the available expertise at UTHSCSA.

Course Objectives:

The primary objective of the course is to improve knowledge in topics related to infection prevention such as hand hygiene, occupational exposures to communicable pathogens, evidence-based measures to prevent healthcare-associated infections, pandemic influenza, seasonal influenza and bioterrorism-associated infections.

There are two secondary objectives.

1. To promote safe practices, decrease exposure to infections, and decrease acquisition of infections on campus amongst UTHSCSA personnel.
2. To improve compliance with evidence-based measures for infection prevention among the physicians, physicians-in-training, medical students, as well as non-physicians.

The most important objective of the course is to improve education amongst UTHSCSA personnel regarding prevention and control of transmissible infections. This course would specifically lead to development in "Medical Knowledge" and "System-based Practice" aspects of physician training as required by the ACGME. Education will help the personnel feel better prepared to practice evidence-based infection prevention measures, and also be able to deal with infection-related public health emergencies, so that they can protect themselves and others. One of the secondary objectives of this course is to promote safer practices, thereby reducing work-related exposure to infections, and decrease the risk of acquisition of infections on UTHSCSA campus. Work-related exposures to infections and acquisition of infections are tracked by Employee Health.

Work Distribution and Timeline:

Phase1. The PI and collaborators will develop the initial course content, in consultation with faculty from Medicine-Infectious Diseases, Pediatrics, Surgery, and Microbiology. This is expected to be completed during Oct'07-Nov'07.

Phase 2. The PI, in collaboration with Dr. Mary Manwell_Jackson will develop the storyboard, and the flash module with fee-for-service from the Multimedia Web Designer in Academic Information Services. This process is expected to be completed during Dec'07-Mar'08. During this process, when 15% of the course content (~3 scenarios) has been designed, there will be an in-development peer review for QA using the tool attached (attachment 1). The feedback obtained will be used in the development of the whole course. At the end of the design of the whole course, there will be an end-of-development QA process by peer review (attachment 2). The peers will be drawn from physician faculty in medicine, surgery and pediatrics.

Phase 3. The course will be hosted on the Knowledge Center during Apr'08. The PI has discussed the proposal with Mr. Bryan Menn, and he anticipates no issues with hosting the course on the Knowledge Center (KC). There is no fee for hosting courses on the KC. The flash modules designed by Ms. Anna Dorrycott in the Academic Informatics Services are specifically configured to integrate seamlessly into the KC. KC is currently functional and has been tried and tested already for other courses.

Phase 4. The course will be pilot tested on the first 20 course-takers, and there will be a focus group session to further identify any problems. The focus group will be led by the Principal Investigator (PI). This phase will be accomplished in May'08-Jun'08.

Phase 5. The course will go-live in Jul'08. Emails will be sent through Knowledge Center to all UTHSCSA personnel recommending them to take the course. The course would be non-mandatory at the outset, and a decision to make it mandatory would be made by Graduate Medical Education.

3. Potential impact

Discuss the effects the proposed changes will have on student learning including the number of students who are likely to be affected.

UTHSCSA has at least 1000 physicians, 600 residents and fellows, and 400 medical students, and several thousand non-physicians. All of these employees and students will directly benefit from the education program. This course will be a method of delivering consistent information on infection prevention, and bridges a large gap in the current system.

Reasons why this course is likely to enhance learning or quality of educational experience:

The investigators believe that this course will enhance infection prevention learning experience in the following ways:

1. The course will be available on the KC. The investigators believe that online training will be effective at UT because of the personnel being internet-savvy, and familiarity with the KC.
2. The course will offer the convenience of being able to learn at any time, any where, and at one's own pace.
3. The course will help the trainees understand important concepts in infection prevention, and it is expected that they would change practice for the better.
4. The course material will be arranged in a must know, nice to know, and advanced layers, with access to references and sources of information, so that they can choose how much they want to learn about each topic, beyond the 'must know' information.

4. Plan for continuation

Priority will be given to activities that will be continued beyond the initial funding period. Grants can be used as seed money to demonstrate the potential impact of the project and attract additional funding.

UTHSCSA Graduate Medical Education and the Department of Medicine/ Division of Infectious Diseases are very supportive of this project. The GME has accepted administrative and financial responsibility for continuation of the course. The Division of Infectious Diseases, specifically, the PI will be responsible for updating the course content annually. (Letters of Support from Dr. Lois Bready and Dr. George Crawford are attached)

The course will be updated annually in June before the beginning of every academic year.

5. Plan for evaluation

Include a formative evaluation that provides information during the development of the project and a summative evaluation of the project outcomes.

Evaluation of the Primary Objective: The primary objective is to improve knowledge in topics related to infection prevention such as hand hygiene, occupational exposures to transmissible pathogens, evidence-based measures to prevent healthcare-associated infections, pandemic influenza, and bioterrorism-associated infections.

During the phase of course development, the tools developed by Dr. Mary Manwell-Jackson for Quality Assurance for online courses at the knowledge center will be used. They are a) In-development Checklist for Knowledge Center Online Courses Peer Review (attachment 1), and b) End-of-Development Evaluation Criteria: "In Development" Checklist for Knowledge Center Online Courses Peer Review (attachment 2). Once the course development is complete and the course is hosted on the knowledge center, effectiveness of the course will be further evaluated by Pilot testing on the first 20 course-takers, and a Focus Group Review. The final test of the first objective will be the magnitude of improvement in performance by trainees after review of the course material (average and median improvement in the proportion of correct answers).

Evaluation of Secondary Objective#1: One of the secondary objectives is to promote safe practices, decrease exposure to infections, and decrease acquisition of infections on campus amongst UTHSCSA personnel. Once the project is complete, and the course is hosted on the KC, the investigators hope that improved knowledge will result in safer practices and a decrease in on-campus exposures to infections that in turn translate into fewer instances of acquisition of infection while on campus. The PI of this project is a member of the Infection Policy and Education Committee and works closely with Employee Health. The data regarding exposures to infections, and acquisition of infections will be examined by the PI to look for a specific trend.

Evaluation of Secondary Objective #2: The other secondary objective is improvement in compliance with evidence-based practices by the physicians, residents and fellows and medical students. The PI of this project is the medical director for the infection control programs at the University Health System, and the South Texas Veterans' Health Care System, which are affiliated with UTHSCSA. The programs monitor compliance with evidence-based measures, and also have surveillance for healthcare-associated infections. It is expected that the impact of the course will be seen in these data.

6. Plan of Information Dissemination

Include the conference, journal or other peer reviewed source in which the results from the study will be shared with other professionals. **Please note:** Plans for IRB approval will have to be discussed with all members of the project. The intent of the IRB is to foster high ethical standards in the conduct of research and to assure that uniform criteria are applied to protect the human subjects who take part in research. Although IRB approval is NOT necessary when submitting the proposal, IRB approval will be necessary before dissemination of results to peer reviewed outlets.

Experiences from the design and performance of this educational project will be shared locally through invited lectures and the school of medicine newsletter. Any data that proceeds from this project will be presented at national meetings and published in peer-reviewed journals in healthcare epidemiology and educational research, as feasible. Approval from the Institutional Review Board will be obtained prior to dissemination of information.

7. Budget/Cost Sharing

Include a justification of the budget so that it is clear why each item requested is essential.

While the Departments of Medicine and Graduate Medical Education will provide personnel, supplies, and facility

support, as well as continue the program beyond the funding period, these departments do not have funds currently for the initial design of this course. Hence, this request for funding the design of this course.

The funding request is limited to the hourly rate services for flash programming, narration, video recording and editing. All these services are essential to the development of this course.

Project Director Biosketch

Submit a NIH biographical sketch of the Project Director below.

NAME

Pranavi Sreeramoju, MD MPH POSITION TITLE

Assistant Professor/ Hospital Epidemiologist; Department of Medicine/ Division of Infectious Diseases; University of Texas Health Science Center; University Health Systems; South Texas Veterans Health System, San Antonio, TX

Email: sreeramoju@uthscsa.edu

Phone: 210 358 4074

My research interests include epidemiology of hospital-acquired infections, outbreak investigations, quality improvement for infection control, and drug-resistant bacteria.

EDUCATION/TRAINING:

INSTITUTION AND LOCATION DEGREE YEAR(s) FIELD OF STUDY

Jawaharlal Institute, Pondicherry, India MBBS 1989-1995 Medical school

Jawaharlal Institute, Pondicherry, India MD 1995-1998 Internal Medicine

Tulane University, New Orleans, LA MPH 1999-2000 Epidemiology

Cook County Hospital, Chicago, IL n/a 2000-2001 Internal Medicine

Kaiser Permanente Medical Center, Oakland, CA n/a 2001-2003 Internal Medicine

University of Illinois at Chicago/ University of Chicago, Chicago, IL n/a 2003-2005 Infectious Diseases

HONORS AND AWARDS:

Apr 2007: First Prize for Best Research Study. Department of Medicine Annual Research Day. UTHSCSA

RESEARCH:

a. Active Surveillance of Respiratory Colonization as a Tool to Predict Gram-Negative Infection after Cardiac Surgery. Pranavi Sreeramoju, MD, MPH, Judith Bova, CIC, Sylvia Garcia-Houchins, CIC, MBA, Stephen G. Weber, MD, MS; Presented at the Infectious Disease Society of America Annual Meeting in Oct 2005

b. A Study of Risk Factors for the Development of Catheter-Related Bloodstream Infection due to Gram Negative bacteria in ICU patients that underwent recent surgery.

Pranavi Sreeramoju, MD, MPH, Jocelyn Tolentino, MPH, Stephen G. Weber, MD, MS

Manuscript submitted for publication

c. Prior antimicrobial therapy and the risk for hospital-acquired non-albicans candidemia: a case-case-control study. Michael Y. Lin, Yehuda Carmeli, Jennifer Zumsteg, Ernesto N. Flores, Pranavi Sreeramoju, Stephen G. Weber. Antimicrobial Agents and Chemotherapy, November 2005, p. 4555-4560, Vol. 49, No. 11

d. Sensitivity of two vs. three sputum smears for acid-fast bacilli in the diagnosis of pulmonary tuberculosis, and implications for the use of hospital resources. Pranavi Sreeramoju, MD, MPH, Theresa M. Tominey, RN, BSN, MN, Jean

Przykucki, RN, MSN, MEd, CIC, James H. Jorgensen, PhD, Jan E. Patterson, MD. Presented at Society for Healthcare Epidemiology in America meeting in Mar 2006

e. Epidemiology of Hepatitis B at a Public Healthcare System. Pranavi Sreeramoju MD, MPH, Jose Cadena MD,

Kristin R. Fiebelkorn MD, Roger Sanchez MPH, Fernando A. Guerra MD, MPH, Ronald C. Hershow MD, MPH.
Presented at Society for Healthcare Epidemiology in America meeting in Apr 2007

Approval certification

PS - By initialing this field, I affirm that my Department Chair has approved this project.