1.   Overall Aim & Objectives:

The goal of this project is to implement an evidence-based Tobacco Cessation Management System in all hospitals in the Charleston, South Carolina region. The system should meet the following criteria:

   a. Provide an evidence based treatment and follow-up algorithm that aligns with the Joint Commission's new tobacco measurement set.
   b. Allow for easy patient enrollment and assignment of patients to an appropriate treatment and follow-up service options based on a patient's tobacco use history, readiness to quit, and medications prescribed.
   c. Allow for patient follow-up after discharge from the hospital using interactive voice response (IVR) and/or secure email for up to six months.
   d. Track the use of stop smoking medications and changes in smoking status in real time.
   e. Allow for the collected data to be accessible to health care providers in a secure format for review via web-based dashboard.
   f. Allow for summary reports displaying patient medication use and smoking status chronologically displayed with report formats that can be generated and tailored for different clinical units in the hospital.

To accomplish this goal, we are seeking resources through this funding mechanism to extend implementation of the TelASK Quit Connection IVR system at the Medical University of South Carolina hospital into five additional hospitals in the Charleston, South Carolina region. The TelASK Quit Connection IVR system is an evidence-based system for tracking the smoking behaviors of patients after discharge from the hospital. The TelASK system will be referred to as the SC-Quits IVR System when implemented at the Medical University of South Carolina and other area hospitals.

2.   Current Assessment of Need in Target Area:

Smoking addiction is a chronic relapsing disorder so one-time interventions to motivate cessation rarely work. Smokers will quit when hospitalized, yet most end up smoking again after discharge from the hospital.

Despite the evidence demonstrating the benefits of implementing brief follow-up support calls for smoking cessation, few hospitals have implemented such interventions, even though it would be highly cost effective to do so (1-4). Studies have shown that contacting patients by phone after discharge from the hospital or after an office visit to assess smoking status and provide appropriate follow-up support can increase long term quit rates by 50% (from 29% to 44%). Recently, the Joint Commission recommended that all current smokers identified upon hospitalization be followed up within one month after hospital discharge to increase long-term cessation rates, so hospitals now have an incentive to implement follow-up support systems (5).

This project will implement the SC-Quits IVR system in major hospitals in the Charleston, South Carolina region.   The Medical University of South Carolina (MUSC) will pilot the SC-Quits IVR system in early 2013 and has already committed to invest $100,000 in start-up costs to implement the system. This request is seeking additional resources that will allow us to extend the SC-Quits IVR service to five additional major hospitals in the region. These hospitals include the three hospitals in the Roper St. Francis Healthcare System (Roper St. Francis Healthcare, Bon Secours St. Francis Hospital, and Roper St. Francis Mt. Pleasant Hospital), Trident Medical Center, and East Cooper Medical Center. Collectively, these hospitals treat over 77,000 patients per year, with a potential reach of 15,000 adult smokers annually.

We have surveyed each hospital as part of the planning for this application to assess how many patients are discharged from the hospital annually and the systems currently in place to identify tobacco users on intake to the hospital, the presence or absence of a hospital cessation coordinator, the delivery of tobacco cessation services to patients, referrals to the South Carolina Tobacco Quitline, and follow-up of tobacco users after discharge from the hospital. Table 1 summarizes the findings from this survey. In a nutshell, our survey found that all hospitals in the Charleston region have systems in place to identify tobacco users upon intake into the hospital, but none of the hospitals have a system in place to routinely provide tobacco cessation services to hospitalized patients. A few of the hospitals do provide tobacco cessation materials and run occasional cessation classes. However, none of the hospitals targeted for this initiative have a mechanism for systematically following up with patients after discharge from the hospitals as recommended by the Joint Commission (5).

Table 1. Tobacco Cessation Efforts of Charleston Area Hospitals

Hospital	System to identify tobacco users at intake	Tobacco Cessation Coordinator	Tobacco Cessation services	Quitline Referrals	Follow-up of smokers post-discharge	# of discharges per year	# of smokers
Medical University of South Carolina	Yes	Yes – to be hired	Tobacco cessation packet (under development)	No	IVR follow-up system will be implemented in 2013	27,770	5,540
Roper St. Francis Healthcare	Yes	No	Classes offered	No	No	15,369	3,074
Bon Secours St. Francis Hospital	Yes	No	No	No	No	8,589	1,713
Roper St. Francis Mt. Pleasant Hospital	Yes	No	No	No	No	1,347	269

Trident Medical Center	Yes	No	Tobacco cessation packet	No	No	20,355	4,071
East Cooper Medical Center	Yes	No	No	No	No	4,205	841
Total	**6/6**	**1/6**	**3/6**	**0/6**	**1/6**	**77,635**	**15,508**

3. Technical Approach, Intervention Design and Methods:

MUSC is modeling its SC-Quits IVR system after a system developed by TelASK Technologies Inc. which has been successfully deployed in several hospitals in Canada and the United States (1-4). The SC-Quits IVR system will generate automated telephone follow-up calls to eligible adult smokers at 3, 14, 30, 60, 90, 120, 150, and 180 days post-office visit or hospital discharge. Up to four callback attempts will be made to reach the person. Telephone follow-up calls are timed to coincide with the periods of time most likely to be associated with relapse back to smoking. Thus, three contacts are set up in the first month after the patient is enrolled in the program. It is during the critical first 30 days that patients often return to smoking and will benefit from pharmacotherapy. Additionally, follow-up calls are spaced at 30-day intervals out to six months from the date of enrollment in the program. Research on smoking relapse shows that relapse is much less common in those who are able to sustain abstinence from smoking for six months or longer. The follow-up system is set up to deliver a standardized set of questions (maximum of 10) with pre-recorded voice prompts to establish patient identity, smoking status (e.g., "Have you smoked any cigarettes since you were last contacted?"), and current use of smoking cessation therapies (e.g., "Are you using the nicotine patches?"). Using branching logic, the IVR system then poses different questions to patients who are smoke-free and for those who are smoking. For patients who are smoking, the system will query about the amount smoked and assess interest in stopping smoking. For those interested in stopping smoking, the system can refer patients directly to a dedicated tobacco cessation service if one exists or if the patient prefers, to the South Carolina Tobacco Quitline. Despite efforts to promote the South Carolina Tobacco Quitline's fax to quit service, none of the hospitals in our survey reported that they routinely refer tobacco using patients to the Quitline. Thus, the SC-Quits IVR system will work to support referrals to the Quitline since the system is set up to allow direct "warm transfers" to this service for patients who are interested. Patients identified by the SC-Quits IVR system as having resumed smoking again, but wanting to make another quit attempt or whose responses indicate a need for additional support from their medical provider will be referred to the hospital's tobacco cessation coordinator.

All current cigarette smokers will be eligible for the SC-Quits IVR service with the following exceptions: 1) patients who died during hospitalization; 2) patients receiving palliative care or have a severe mental illness; 3) patients less than 18 years of age; 4) patients who have a communication barrier such as hearing, speech or language; 5) patients who do not have a phone for re-contact; and 5) patients who have previously been enrolled in the SC-Quits IVR program. Patients will automatically be enrolled in the service, but will be given the option to

"opt out" at any time. In a previous study with cancer patients, it was found that fewer than 4% who were automatically referred to a cessation service "opted out" of the service once contacted by phone (6). Reliance on physicians or other health care staff to proactively refer patients into a tobacco cessation service captures fewer than 25% of eligible smokers, mainly because busy health care providers forget to make the referral, not because patients are unwilling to accept it. A unique element of this program is that virtually ALL cigarette smokers (with the few exceptions noted above) will automatically be referred into the SC-Quits IVR service, greatly expanding the usual delivery of cessation support services to smokers. Moreover, the service re-contacts patients on multiple occasions to reinforce continued abstinence among those who are smoke-free, prompting those not ready to stop smoking to do so, and urging those have relapsed back to smoking to quit again.

Each hospital will need to designate a tobacco cessation counselor to oversee implementation of the SC-Quits IVR program.   Since current tobacco use status is already routinely captured on hospital intake records, this will allow each hospital to routinely identify the patients that will be eligible for the follow-up service. At MUSC the EPIC data system captures information about tobacco use status as indicated below.

Tobacco Use	Never Assessed		Packs/day	0.25 0.5 1 1.5 2 0.00	
Years	0.5 1 2 3 4 5 0.0		Quit Date		
Smokeless Tobacco	Unknown		Quit Date		
Ready to Quit	Yes No		Counseling Given Yes No		
Comment					

✓ Mark as Reviewed   Last Reviewed by Montana Nan on 1/17/2010 at 4:54 PM

Obviously, for tobacco cessation counseling it would be beneficial to have detailed information about someone's smoking status such as time to first cigarette of the day, years of smoking, interest in stopping smoking, past quit attempts and use of medications. We will attempt to capture this more detailed information in the social history section of the patient's medical record by encouraging clinical staff to record this data using a standardized assessment built into the electronic medical record. However, past experience suggests that capturing the more detailed smoking history information can be best accomplished having a dedicated tobacco cessation counselor who will meet with patients prior to hospital discharge.

The SC-Quits IVR system is designed so that all data collected will be HIPAA compliant and hosted in a secure internet data center with real time web access by referring health providers over an encrypted access portal (see example on next page).
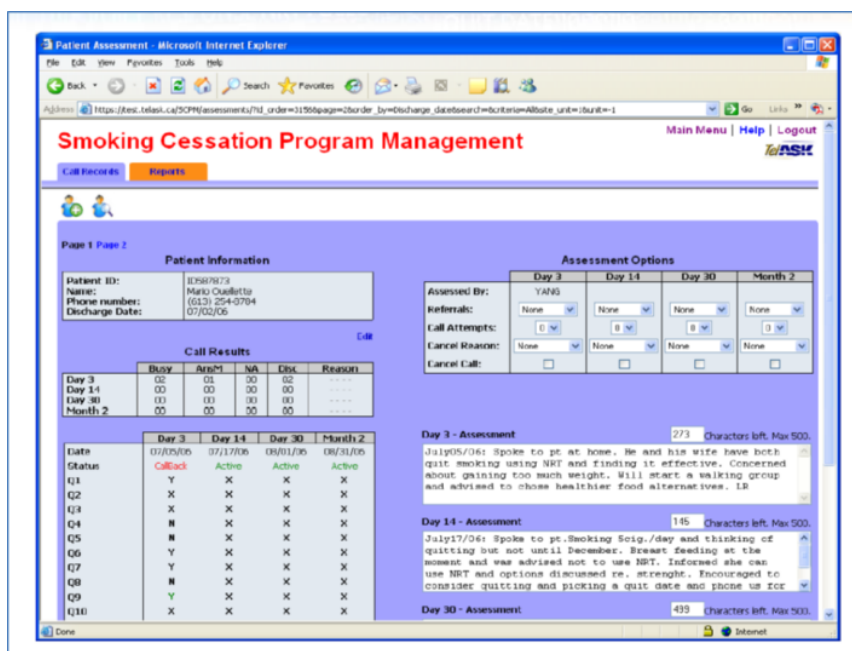
The SC-Quits IVR systems have been applied successfully in a variety of medical settings to assess patients at home after hospital discharge for adverse outcomes (7, 8). To date, four studies have explored the potential of IVR to follow smokers after discharge as part of comprehensive hospital-based smoking interventions (the "University of Ottawa Heart Institute Model") demonstrating that it is feasible to use IVR as a follow-up tool after patients are discharged from the hospital (1-4). The use of IVR follow-up has been shown to increase the delivery of evidence based cessation support and increase long term quit rates by roughly 50% (3). Of the four published studies evaluating IVR follow-up for smoking cessation, three were focused on post-discharge follow-up of smokers who were admitted for myocardial infarction (2-4).

4.   Evaluation Design

The evaluation will be guided by the RE-AIM framework (Research, Efficacy, Adoption, Implementation, and Maintenance) with the specific outcome measures that will be used to define program success:

Measure	Definition
Reach	• The percentage of all identified current smokers in each hospital enrolled in the SC-Quits IVR Program
Efficacy	• The percentage of smokers assessed as not smoking (7-day nonsmoking prevalence) at 6 months follow-up • The percentage of smokers who report the use of evidence-based stop smoking medications during the 6 month follow-up period
Adoption	• The length of time (number of days) required to get the SC-Quits IVR program operational within each of the five targeted hospitals

Implementation	• The percentage of smokers enrolled in the SC-Quits service who complete IVR calls • The percentage of smokers enrolled in the SC-Quits IVR program referred to a service with evidence that the service was accessed (e.g., stop smoking medications filled, enrollment in the SC Tobacco Quitline) • Implementation problems
Maintenance	• Per patient cost of operating the service in each hospital • Level of compliance with the Joint Commission's standard for delivery of cessation support to tobacco users

When fully operational, we estimate the eligible population to be approximately 15,000 smokers per year of which we expect to enroll at least 12,000 in the SC-Quits IVR program. Based on previous studies (3-4), we estimate WITHOUT the service about 80% of the smokers will still be smoking 6 months later (n=9,600/12,000); i.e., 20% not smoking.

WITH the SC-Quits IVR program in place we expect to reduce the percentage of smokers still smoking at 6 months to no more than 70% (n= 8,400/8,000); i.e., 30% not smoking.

A pre-intervention data collection will be undertaken in each hospital so we can track what the quit rates would be WITHOUT the SC-Quits IVR program. Approximately, 1,000 adult smokers who meet the eligibility criteria for the SC-Quits IVR program across the five hospitals, plus MUSC will be identified over a three month period. All smokers identified will be asked whether they would be willing to be re-contacted. Those who agree will be called at 6-months to assess their smoking status and efforts made to stop smoking including the use of evidence based stop smoking medications over the preceding 6-month period. This group of smokers will serve as the control group for determining the pre-implementation quit rates.

Detailed Work Plan and Deliverables Schedule

The SC-Quits IVR program offers the potential to rapidly and dramatically increase the number of tobacco users reached with cessation support services in South Carolina. If the SC-Quits IVR system works as we expect, we would foresee expanding the service to other hospitals across the state. The Medical University of South Carolina (MUSC) has already committed to pilot the SC-Quits IVR system. Thus, this request is only seeking resources that will allow us to expand the service to five other major hospitals in the region. The following activities will be carried out to achieve the expansion of the SC-Quits IVR system.

Activities	Description
Meet with key hospital officials	• Meeting with administrative, medical and nursing leadership in each hospital • Get commitments to implement the SC-Quits IVR Program via a Memorandum of Agreement (MOA)
Baseline audit	• Review current practices related to tobacco dependence assessment and treatment • Review completeness of current assessment methods • Determine IT needs so that the SC-Quits system can be integrated with existing data capture systems in each hospital
Goal setting	• Establish practice goals for improving the reach and delivery of tobacco cessation services • Develop a timeline for implementing the program
Practice tools	• Review and approve standardized tobacco status questions on intake histories • Review and approve standard orders for smoking cessation medications • Review and approve patient education materials • Review and approve IVR mediated follow system
Staff training and follow-up	• Conduct meetings with frontline hospital and clinic staff to educate them about the SC-Quits IVR program – who is eligible and how it works • Conduct quarterly follow-up meeting with key staff to share program results with unit managers, hospital leadership, and frontline staff
Evaluation	• Document the reach, efficacy, level of adoption, implementation fidelity, and cost of the program in each clinical unit