University of South Carolina School of Medicine

Executive Summary - Rural Healthcare Initiatives 2017-2018

Introduction

The University Of South Carolina School Of Medicine (USC SOM) mission is improving the health of the people of South Carolina through medical education, research and health care delivery. In 2015 we partnered with SC DHHS to expand programs training, recruiting and retaining primary care physicians in rural and underserved areas. In 2016 we expanded the ICARED program to serve increasing numbers of rural patients, worked to establish a new residency training site in the rural Midlands, and established a Center of Excellence at USC SOM devoted to rural and primary healthcare. We propose expanding on these programs and initiating new efforts to improve the health of South Carolinians.

I. The South Carolina Center for Rural Health and Primary Care

Mission: Support and develop rural and primary care education, delivery, and sustainability in South Carolina through clinical practice, training and research.

2016-17 Proviso 33.27 directed the USC School of Medicine to establish the above named center of excellence devoted to supporting rural medical education and practice excellence in South Carolina. This center will develop and support training programs, continuing education, and clinical practice improvement for rural physicians. Furthermore, it will support rural health research by testing best practices developed by the center as well as those utilized in other states. An Advisory Committee comprised of key state stakeholders supporting rural and primary healthcare provides consultation to enhance the Center's progress on its core objectives.

Center Initiatives for 2016:

1) Conduct a detailed analysis of rural health care resources in South Carolina. This will evolve into an up-to-date data warehouse of public-use data, aggregated and summarized to the county and local level, to be utilized by providers, policy makers, and educators to alleviate health disparities within the state.
2) Establish the rural practice information hub for rural clinicians to collaborate, interact, and exchange ideas and best practices. This will also support the Pharmacy extension service (see below). Furthermore, we will provide enhanced clinical information and continuing education services to rural practitioners enrolled in the online learning community.
3) Establish a Rural Health Fellowship site.
4) Establish a Rural Practitioner/Staff Development and Practice Enhancement seed grant program
5) Expand capacity for USC SOM rural clinical training sites at rural practice sites in the SC Midlands or Pee Dee region to increase student and resident interest in rural practice.
6) Establish and administrate a statewide Rural Practice Scholarship and Loan Repayment Program for Medical Students, Advanced Practice Registered Nurse and Physician Assistant students. Students from state affiliated health professions schools are eligible to participate.
7) Establish a Rural Pharmacy Extension service using clinical pharmacists for each of the four SC AHEC zones. This service will challenging pharmacotherapy issues, disseminate important medication safety information, and provide evidence-based recommendations for effective, safe and high value medication use.

Additional proposed initiatives 2017:

1) Rural residency continuity track – Winnsboro, SC
    a. Develop the present Winnsboro rural practice and educational site into a permanent track for one additional Family Medicine resident per year to conduct continuity clinical training.
2) Expansion of research center infrastructure
    a. Expand research conducted by the Center to support additional graduate assistants and research funding.
3) Pilot program for an accelerated medical school track
    a. Collaborate with the University of North Carolina and East Carolina University on a program involving a 3-3-3 track for medical students. The program shortens medical school to 3 years, guarantees residency admission (in this case to the PH/USC Family Medicine program) and requires a post graduate 3 year commitment in a community health center. This program would involve two to three students at the USC SOM. If successful could be expanded to other SC medical schools.

2016-17 Initiatives		
Administrative budget	Office, technical support and administrative assistant salary	85,000
Center Director, Associate Director	Director and Associate Director	123,461
Research Division	Research Director, Graduate Assistant funding and research infrastructure	128,451
Rural Practice Information Network	Technology, web hosting and salary support for part-time medical librarian	75,356
Interprofessional Team Training for rural practices	Commission interprofessional team training for rural practices in collaboration with SCORH/ USC College of Social Work	200,000
Rural Fellowship	Fellowship funding and loan repayment	220,000
Rural Practice Enhancement Grants	Grants for rural practices	50,000
Educational Site Development	Rural educational sites for rotations	117,732
	2016-17 Funding Total	**1,000,000**
New Initiatives		
Winnsboro Rural Track	Establish rural training track	400,000
Research Center Expansion	Expand research division	100,000
Accelerated Medical School Pilot	Test 3-3-3 pilot program for students (3 years medical school, 3 years residency, 3 years in SC community health center)	400,000
	New Initiatives Funding Total	**900,000**
	2017-18 Funding Request Total	**$1,900,000**

II. Medical Student, Advanced Practice Registered Nurse and Physician Assistant Rural Practice Scholarship and Loan Repayment Program

Mission: Administrate a multi-tiered scholarship and loan repayment program piloted by the USC School of Medicine to all state affiliated health professions schools.

Given that the primary care workforce across South Carolina is inadequate, especially in rural areas, the SC Center for Rural and Primary Healthcare proposed expanding the program piloted by the USC SOM to offer the program to a larger number of applicants to increase the size of the future rural primary care workforce pipeline. The proposal is currently under evaluation at SC DHHS. We request level funding for the 2016 proposal.

Scholarship and loan repayment recipients are required to commit to rural South Carolina practice in a primary care specialty (Family Medicine, General Pediatrics, or General Internal Medicine) or other critical need specialty (General Surgery, OB/GYN, Psychiatry) for each year of scholarship funds received.

Students from all publicly affiliated South Carolina medical schools (USC SOM, Medical University of South Carolina, and USC-Greenville School of Medicine) will be eligible for the program with scholarships allotted to each institution. Scholarships can be redirected to another institution in the case where there is an interested, eligible student and a scholarship is unclaimed. Four of these scholarships would be designated for underrepresented minority students. In addition to the necessary expansion of the physician workforce in rural areas, there is also a need to support placement of advanced practice clinicians as well. Therefore, a parallel program for APRN and PA students is offered.

Medical students scholarships	Twelve (12) scholarships @ $25,000 (tuition) per year. Four year rural SC practice commitment.	1,200,000
Medical student loan repayment program	Twelve (12) loan repayment grants for finishing medical students committing to rural primary care or critical need training. Total award of $80,000 each. Four year rural SC practice commitment.	960,000
APRN or PA loan repayment grants	Fifteen (15) scholarships or loan repayment grants for incoming publicly funded SC APRN or PA students committing to rural primary care practice. Total scholarship award of $30,000 each. 3 years rural SC practice commitment. Loan repayments of $30,000 each. 3 years rural SC practice commitment. Awards will first go to students committing to the scholarship program. Uncommitted remain funds will be available for the repayment grant program.	450,000
Retention bonus program	Annual retention bonus program for both programs.	80,000
	Total	**$2,690,000**

III. Rural Clinical Pharmacy Extension Service

Extension services modeled after agricultural extension services have been proposed as an innovative solution to transforming primary care. Clinical pharmacists are an essential part of an interdisciplinary medical team. This program will establish a rural clinical pharmacy extension service providing access to a clinical pharmacist for each of the four SC AHEC zones. This extension service will provide clinical pharmacy consultants from USC and MUSC College of Pharmacy to practices throughout the state to address challenging pharmacotherapy issues, disseminate important medication safety information, and provide evidence-based recommendations for effective and high value medication use.

Commission one PharmD FTE for each SC AHEC region to serve as an extension agent for pharmacotherapeutic consults for rural healthcare providers. 2 PharmD from USC College of Pharmacy and MUSC College of Pharmacy	
Program Administration	60,000
PharmD for each AHEC region	740,000
Total	**$800,000**

IV. Rural Residency Expansion

As part of the Rural Health Initiative, USC SOM, Palmetto Health Richland, and Palmetto Health Tuomey began the process to establish a Family Medicine training program in Sumter, SC, to enhance the primary care workforce serving this rural catchment area. Plans are to continue developing the program with a target start date for the first residents of July 1, 2018. We request an additional $500,000 to support infrastructure development and faculty hiring for this program.

IV. ICARED Program

Clinical services and practice support with a focus on innovative technologies initiated in the ICARED grant would be continued in this grant proposal. Furthermore, we propose expanding the program funding to allow for six additional practice sites.

The ICARED Program supports rural clinical practices through:

1. Continuing Medical Education: Determine the continuing medical education needs of rural and underserved primary care physician practices in South Carolina. Provide a variety of educational venues to satisfy these needs, including tele-education (noon conferences/grand rounds), CME programs, library access and subscriptions. Where there is overlap with AHEC's tele-education system we will utilize their infrastructure to make the content available. Individual content will be coordinated through the ICARED program and SC Center for Rural and Primary Healthcare.

2. IT advisement/quality payment program/quality metrics consulting support: Determine the information technology (IT) needs of rural and underserved primary care physician practices as a means of providing several of our deliverables. Consult and advise on implementation of quality metric reporting infrastructure, quality payment program participation, and practice management/EHR systems. Program aims to impact Quality Indicators including, but not limited to, reducing disease morbidity in rural hotspots and reducing recidivism and hospital costs.

3. Telemedicine: We will utilize telemedicine to provide education and real-time consultation for subspecialty areas of medicine we geographically serve (determined by need of the individual practices as determined by our surveys, e.g. MFM, adult neurology, psychiatry, cardiology, endocrinology, and genetic counseling). In addition we will also have subspecialists available at certain rural locations in person. While infrastructure funding will come from collaboration with the MUSC Statewide Telehealth Initiative, payment for telemedicine subspecialty consultation will come from ICARED funding.

4. Onsite Subspecialty Support: Provide boots on the ground subspecialists including dentists, pediatric subspecialists, maternal fetal medicine specialists, neurology, orthopedics and adult cardiologists to augment the care being provided in the local community. Expansions for clinical care are planned in addition to the 9 sites which are currently funded through ICARED. Our current sites include Society Hill, Hartsville, Orangeburg, Sumter, Lancaster, Winnsboro, Aiken, Bamberg, and Florence.

5. New Technologies: Pilot programs in Orangeburg and Calhoun counties have provided onsite echocardiography through a mobile echo unit through USC SOM's Division of Pediatric Cardiology. This has proven extremely cost effective and has prevented the unnecessary transfer of many neonates by ruling out significant heart disease locally and, conversely, has enlisted appropriate transport of neonates diagnosed with specific heart problems requiring surgical intervention. We would expand this service to other rural communities. We would also train physicians in rural settings through educational workshops and loaner hand held ultrasound units.

6. Community Engagement: The FoodShare Fresh Food Box program which started in Richland County to help patients with type 2 diabetes mellitus improve nutrition by overcoming 3 main hurdles: fresh food access, affordability and nutrition education. Fresh produce will be delivered to participants in Orangeburg and Bamberg counties for $10 along with 45 minutes of diabetes tele-education.

7. Immunology Center: Staging for patients with hepatitis C disease and clinical advice on treatment will be provided by infectious disease specialists at the USC SOM.

8. Remote Heart Failure Monitoring: A remote heart failure monitoring program will be implemented for patients living in rural counties in Sumter and surrounding counties (Kershaw, Lee, Darlington, Clarendon, Florence, Calhoun, and Williamsburg). Early interventions directed by a cardiologist can be made to avoid hospitalization.

9. USC School of Nursing: Palliative care demonstration project to expand access to palliative care services. This project will pilot test a PC consult delivered by a PC physician (with a SC license) and/or Nurse Practitioner (NP) to patients with a serious illness attending a rural FQHC clinic.

10. USC School of Pharmacy: The College of Pharmacy will develop services including teaching, clinical practice education, and research through an experiential teaching model in rural health settings; a continuing medical program initiative to target rural pharmacies; and develop a rural health pharmacy residency and pharmacy student internship.

11. USC School of Public Health: The USC School of Public Health will assess the change in the primary care service delivery profile in South Carolina by conducting a multi-method assessment of changes in the primary care delivery system in rural South Carolina to 1) determine the extent of practice acquisition, 2) assess patient level impact on travel for care and receipt of appropriate services. [Note: many Medicaid patients are currently

served by FQHCs; changes may cause additional patients previously served by rural health clinics or other rural providers to seek care from FQHCs instead.], and 3) provider impact regarding perceived changes in the practice environment on patient mix, workload, and financial stability.

12. USC School of Social Work: The USC College of Social Work will develop and deliver a practice level team training program. Inter-professional teamwork is critical to developing high performing practices. Therefore, in collaboration with the SCORH and the USC College of Social Work we will develop an inter-professional Team Training course for rural practices.

ICARED Program Funding Summary	
Continuing medical education	200,000
IT consulting and administrative costs	50,000
Telemedicine consultation	290,000
Onsite subspecialty support (projected clinics: 10) Program Coordinators: Program Coordinators: $40,000 (* 1 Program Coordinator per 4 clinics)	2,000,000 120,000
New Technologies	250,000
USC School of Nursing	250,000
USC School of Public Health	250,000
USC School of Pharmacy	250,000
USC School of Social Work	250,000
Administrative coordinator	90,000
Total	**$4,000,000**

V. 2017-18 Funding Request Summary

SC Center for Rural and Primary Healthcare 1. Center Funding ($1,500,000 recurring) 2. Scholarship and Loan Program ($2,690,000) 3. Pharmacy Extension Service ($800,000) 4. Winnsboro expansion ($400,000)	$5,390,000
Rural Residency Development Sumter	$500,000
ICARED Program 1. Continue existing ICARED service 2. Expand ICARED services	$4,000,000
Total	**$9,890,000**

University of South Carolina School of Medicine

Rural Healthcare Initiatives 2017-2018

Introduction

The University Of South Carolina School Of Medicine (USC SOM) mission is improving the health of the people of South Carolina through medical education, research and health care delivery. A significant portion of our medical education mission focuses on training primary care physicians. Ideally these physicians will remain in South Carolina and in our state's areas of greatest need.

In 2015 we partnered with the South Carolina Department of Health and Human Services to expand programs training, recruiting and retaining primary care physicians in South Carolina's rural and underserved areas. In 2016 we expanded the ICARED program to serve increasing numbers of rural patients, worked to establish a new residency training site in the rural Midlands, and established a Center of Excellence at USC SOM devoted to rural and primary healthcare. We propose expanding on these programs and initiating new efforts to improve the health of South Carolinians.

I. The South Carolina Center for Rural Health and Primary Care

Mission: Support and develop rural and primary care education, delivery, and sustainability in South Carolina through clinical practice, training and research.

In 2016 the USC SOM established a center of excellence devoted to supporting rural medical education and practice excellence in South Carolina. It will develop and support training programs, support continuing education and clinical practice improvement for rural physicians, and support research on rural health issues by both employing and testing best practices developed by the center as well as those utilized in other states.

The Center will guide its efforts and measure outcomes according to the following core objectives:

- Provide programs supporting rural and underserved healthcare providers through enhancing quality clinical care, practice support and professional development, and professional satisfaction and retention.
- Develop and/or support programs that improve the diversity and distribution of South Carolina's rural health workforce.
- Facilitate research necessary to inform strategy, investment and health policy related to rural and primary care in South Carolina.
- Support rural and underserved primary health providers in South Carolina by providing and assisting with advancement of programs giving access to specialized services.
- Promote collaboration among state entities involved in rural health issues.
- Develop and support programs to increase and enhance rural health professions and interprofessional education opportunities in South Carolina.

The Center resides administratively in the USC SOM. The Center is directly administered by its designated Director who reports to the Associate Dean for Clinical Affairs and Chief Medical Officer of the USC SOM. Once fully funded, the Director will hire an Associate Director, Research Director and an administrative assistant. Furthermore, the center is supported in its mission by an Advisory Committee. It will engage stakeholders in ongoing collaboration on rural health issues and provide consultation to Center leadership to enhance its progress on its core objectives. The Advisory committee will have broad representation from key stakeholders supporting rural and primary healthcare in South Carolina including the South Carolina Office of Rural Health, South Carolina AHEC, SC DHEC, SC Primary Healthcare Association as well as state educational institutions and community representatives.

Center Initiatives for 2016:

1) Establish Center and staffing
    a. Onboarding of Director, Associate Director, Research Director and Administrative Assistant
2) Establish research division
    a. Conduct a detailed analysis of rural health care resources in the State of South Carolina, and to utilize existing data to examine disease burdens and health care utilization patterns across the state to examine this interplay of factors in health care delivery and outcomes. Ultimately, this will evolve into an up-to-date data warehouse of public-use data, aggregated and summarized to the local level, to be utilized by providers, policy makers, and educators to alleviate health disparities within the state.
    b. We will quantify each county's need for health care services with specific emphasis on rural locations and their unique access issues. In particular we can identify counties that have an overlap of factors indicating need for additional resources. These so-called "hot-spot" approaches can then be used to target workforce development, training, and placement.
    c. In future years we will track trends in these data to proactively identify areas that are at risk for developing deficit conditions, either due to decline resources or increased in health care needs.
3) Establish the rural practice information hub
    a. This will allow rural clinicians to collaborate, interact, and exchange ideas and best practices. This will also support the Pharmacy extension service (see below). Furthermore, we will provide enhanced clinical information and continuing education services to rural practitioners enrolled in the online learning community. Finally, a part-time medical librarian will be hired to support the network, catalogue discussion forums, distribute information from the Center to rural practices, and facilitating information exchange.
4) Rural Health Fellowship
    a. Establish a site and initial framework for the fellowship and begin recruitment process for future fellows.
5) Rural Practitioner/Staff Development and Practice Enhancement Grants

a. Issue call for rural practices to submit grant requests. Grants can be used for infrastructure (ex. computers) or for physician, practitioner, or staff development.

6) Educational site development
   a. Expand capacity for rural clinical training sites at the USC School of Medicine to increase student and resident interest in rural practice. Develop infrastructure, physician support, and model multidisciplinary practices at rural practice sites in the SC Midlands or Pee Dee region to support resident electives, student rotations, and multidisciplinary health education for students. Expand capacity for rural clinical training sites at the USC School of Medicine to increase student and resident interest in rural practice.
7) Scholarship program
   a. The USC SOM established a pilot demonstration scholarship program in 2016 and will enroll its first students in the 2017 academic year. See below for pending proposal for expanded program.

Administrative budget	Office, technical support and administrative assistant salary	85,000
Center Director, Associate Director	Salary and travel expenses for Director and Associate Director	123,461
Research Division	Salary and travel for Research Director, Graduate Assistant funding and research infrastructure	128,451
Rural Practice Information Network	Technology, web hosting and salary support for part-time medical librarian who will maintain network	75,356
Interprofessional Team Training for rural practices	Commission development of interprofessional team training for rural practices in collaboration with SCORH and USC College of Social Work	200,000
Rural Fellowship	Fellowship funding and loan repayment	220,000
Rural Practice Enhancement Grants	Grants for rural practices	50,000
Educational Site Development	Develop rural educational sites for health sciences rotations	117,732
	Total	**1,000,000**

Additional proposed initiative 2017:

In addition to continuation of the above programs, we propose the following additional initiatives for the SC Center for Rural and Primary Healthcare

1) Rural residency continuity track – Winnsboro, SC
    a. We propose developing the present Winnsboro rural practice and educational site into a permanent track for one additional Family Medicine resident per year to conduct continuity clinical training. This approach allows for a more rapid development and approval process from residency accrediting bodies and, therefore, more rapid production of physicians likely to practice in rural areas. Initial year one funding will include cost for the additional resident as well as on-site infrastructure development to allow for the residents to conduct clinical training.
    b.

	Resident Funding	Infrastructure	Total
Year 1	100,000	300,000	400,000
Year 2	200,000	0	200,000
Year 3	300,000	0	300,000

2) Expansion of research center infrastructure
    a. To continue and expand on research conducted by the SC Center for Rural and Primary Healthcare we propose an additional $100,000 (recurring) in funding to support additional graduate assistants and research funding.

3) Pilot program for an accelerated medical school track
    a. We propose collaborating with the University of North Carolina and East Carolina University on a program involving a 3-3-3 track for medical students. The program is under initial investigation at the University of North Carolina and seeking regional partners. The program shortens medical school to 3 years, guarantees residency admission (in this case to the PH/USC Family Medicine program) and requires a post graduate 3 year commitment in a community health center. This program would involve two to three students at the USC SOM. We request $400,000 recurring to help fund and sustain this program.

II. Medical Student, Advanced Practice Registered Nurse and Physician Assistant Rural Practice Scholarship and Loan Repayment Program

Mission: Administrate a multi-tiered scholarship and loan repayment program piloted by the USC School of Medicine to all state affiliated health professions schools.

Given that the primary care workforce across South Carolina is inadequate, especially in rural areas, the SC Center for Rural and Primary Healthcare proposed expanding the program to a larger number of applicants to increase the size of the future rural primary care workforce pipeline. The proposal is currently under evaluation at SC DHHS. We request level funding for the 2016 proposal.

Evidence indicates that escalating fiscal obligations may be turning students away from primary care, which pays significantly less than other more lucrative specialties. Furthermore, costs reduce the number of low-income and minority student applicants due to fear of huge loan burden. Current in-state USC medical school cost is approximately $40,000 per year including all costs.

Scholarship and loan repayment recipients are required to commit to rural South Carolina practice in a primary care specialty (Family Medicine, General Pediatrics, or General Internal Medicine) or other critical need specialty (General Surgery, OB/GYN, Psychiatry) for each year of scholarship funds received.

Geographic areas of South Carolina would be identified (Pee Dee, Low Country, Midlands & Upstate) and students from South Carolina would be given first priority. Other recruiting priorities include rural, underrepresented and/or underprivileged background. Students are eligible to enter the program during either their first year of medical school or prior to graduating medical school. They agree to return to practice in rural areas of South Carolina after residency training as determined by the program (rural needs to be defined with consideration of geographic distribution for scholarships- Midlands, Pee Dee, etc.). Given that training in proximity to rural areas predicts future practice and that Family Medicine training is more dispersed to these areas compared to other specialties, particular emphasis will be on recruiting Family Medicine physicians.

Students from all publicly affiliated South Carolina medical schools (USC- Columbia, Medical University of South Carolina, and USC-Greenville School of Medicine) will be eligible for the program. Three scholarships will be allotted to each institution. Scholarships can be redirected to another institution in the case where there is an interested, eligible student and a scholarship is unclaimed. Four of these scholarships would be designated for underrepresented minority students. In addition to the necessary expansion of the physician workforce in rural areas, there is also a need to support placement of advanced practice clinicians as well. These valuable providers are essential to establishing the interprofessional teams needed to support rural patient-centered medical homes.

Scholarship recipients will be required to commit to rural South Carolina practice in a primary care specialty (Family Medicine, General Pediatrics, or General Internal Medicine) or other critical need specialty (General Surgery, Obstetrics/Gynecology, Psychiatry) for each year of scholarship or loan repayment funds received.

The SC Center of Rural and Primary Healthcare will administrate the program as specified in Proviso 33.27. The Center will 1) design the parameters for program participation; 2) verify the approved locations for practice; 3) organize designated payments; and 4) track and report program outcomes. The individual state institutions will offer these programs to students as part of general scholarship offerings or programs for graduating students. Schools would be responsible for verifying student eligibility and awarding payments.

Scholarships for incoming medical students	Twelve (12) scholarships @ $25,000 (tuition) per year for a total scholarship award of $100,000. Four year rural SC practice commitment.	1,200,000
Loan repayment program for graduating medical students	Twelve (12) loan repayment grants for finishing medical students committing to rural primary care or critical need training. The payment is $40,000 at medical school graduation and $40,000 at completion of residency for a total award of $80,000 each. Four year rural SC practice commitment.	960,000
APRN or PA loan repayment grants	Fifteen (15) scholarships or loan repayment grants for incoming APRN or PA students committing to rural primary care practice give $12,000 (tuition) per year for a total scholarship award of $30,000 each (covering the 27 month educational program). 3 years rural SC practice commitment. Loan repayments would be $15,000 at graduation and $15,000 at completion of two years of the initial practice commitment for a total award of $30,000 each. 3 years rural SC practice commitment. Students from all publicly funded South Carolina PA and APRN programs will be eligible for the scholarship and/or repayment grant program. 3 scholarships will be allotted to each school; as above, unclaimed scholarships can be shifted to other institutions with an eligible student. Awards will first go to students committing to the scholarship program. Uncommitted remain funds will be available for the repayment grant program.	450,000
Retention bonus program	Annual retention bonus program for both programs. Physicians could receive $10,000 a year for up to three years and APRN and PA participants could receive $5000 a year for up to three years.	80,000
	Total	**2,690,000**

III. Rural Clinical Pharmacy Extension Service

Extension services modeled after agricultural extension services have been proposed as an innovative solution to transforming primary care. Clinical pharmacists are an essential part of an interdisciplinary medical team. This program will establish a rural clinical pharmacy extension service providing access to a clinical pharmacist for each of the four SC AHEC zones. This extension service will provide clinical pharmacy consultants from USC and MUSC College of Pharmacy to practices throughout the state to address challenging pharmacotherapy issues, disseminate important medication safety information, and provide evidence-based recommendations for effective and high value medication use.

This initiative is proposed and pending final funding approval from DHHS as part of 2016 Rural Health Initiative provisos.

Commission one PharmD FTE for each SC AHEC region to serve as an extension agent for pharmacotherapeutic consults for rural healthcare providers. 2 PharmD from USC College of Pharmacy and MUSC College of Pharmacy	
Program Administration	60,000
PharmD for each AHEC region	740,000
Total	**800,000**

IV. Rural Residency Expansion

As part of the Rural Health Initiative, USC SOM, Palmetto Health Richland, and Palmetto Health Tuomey began the process to establish a Family Medicine training program in Sumter, SC, to enhance the primary care workforce serving this rural catchment area. Initial phases of this project included an extensive analysis of local resources and financial sustainability for this program. The Program Coordinator has been hired and recruiting for a Program Director is underway. Plans are to continue developing the program with a target start date for the first residents of July 1, 2018. We request an additional $500,000 to support infrastructure development and faculty hiring for this program.

Continued development of Sumter Family Medicine training program	**500,000**

IV. The ICARED Program

Clinical services and practice support with a focus on innovative technologies initiated in the ICARED (Improved CAre and provision of Rural access to Eliminate health Disparities) grant would be continued in this grant proposal. Furthermore, we propose expanding the program funding to allow for six additional practice sites.

The ICARED Program supports rural clinical practices through:

a) Continuing Medical Education

We will reach out to rural and underserved primary care physician practices located in South Carolina and determine from them their continuing medical education needs. We will provide a variety of educational venues to satisfy these needs, including tele-education (noon conferences/grand rounds), CME programs, library access and subscriptions. Where there is overlap with AHEC's tele-education system we will utilize their infrastructure to make the content available. The individual content will be coordinated through the ICARED program and SC Center for Rural and Primary Healthcare.

b) IT advisement/quality payment program/quality metrics consulting support

As part of our surveys with the rural practices we will determine their information technology (IT) needs as a means of providing several of our deliverables. Funds will be used to consult and advise on implementation of quality metric reporting infrastructure, quality payment program participation, and to render advice on practice management and EHR systems.

Program success will have a positive impact on Health Quality Indicators including, but not limited to, reducing disease morbidity in rural hotspots and reducing recidivism and hospital costs.

We will obtain county-specific disease morbidity data and hospital cost data from DHHS, DHEC as well as local county resources and the provider office. This data will serve as a baseline for health quality improvement. Measurements will be obtained in year one and compared in subsequent years.

c) Telemedicine

To improve access to specialty services in rural parts of the state, we will utilize telemedicine to provide education and real-time consultation for subspecialty areas of medicine we geographically serve (determined by need of the individual practices as determined by our surveys, e.g. MFM, adult neurology, psychiatry, cardiology, endocrinology, and genetic counseling). In addition we will also have subspecialists available at certain rural locations in person. This assumes that telemedicine equipment (Polycom system) is available at the practice sites.

The funding for telemedicine educational and medical care provision infrastructure will be derived from the Statewide Telehealth Initiative which has

been funded by the legislature to MUSC and administered by MUSC and its coalition partners. Infrastructure to support telehealth will come from this funding. Payment for telemedicine subspecialty consultation will come from ICARED funding. Faculty and residents in the School of Medicine anticipate providing an estimated 5,000 calls/year for an average of 15 minutes each. With a rate of $150/hr the total annual cost will be $187,500.

d) Onsite Subspecialty Support

Two of our recently initiated rural practices are in Sumter and Orangeburg Counties. This program will provide boots on the ground subspecialists including dentists, pediatric subspecialists, maternal fetal medicine specialists, neurology, orthopedics and adult cardiologists to augment the care being provided in the local community. Expansions for clinical care are planned in addition to the 9 sites which are currently funded through ICARED. Our current sites include Society Hill, Hartsville, Orangeburg, Sumter, Lancaster, Winnsboro, Aiken, Bamberg, and Florence.

e) New Technologies

Currently newborns in outlying hospitals with suspected cardiac problems must be transported to tertiary care centers with echocardiography capabilities and cardiac specialists for definitive diagnoses. This is expensive and traumatic to families. Pilot programs in Orangeburg and Calhoun counties have provided onsite echocardiography through a mobile echo unit through USC's Division of Pediatric Cardiology. This has proven extremely cost effective and has prevented the unnecessary transfer of many neonates by ruling out significant heart disease locally and, conversely, has enlisted appropriate transport of neonates diagnosed with specific heart problems requiring surgical intervention. With this program, we would be able to expand this service to other rural communities. USC SOM has been a pioneer in ultrasonography education as the first medical school in the nation to offer ultrasound education to medical students throughout their four years of medical school. This new technology is proving to be invaluable to our clinical diagnostic armamentarium—particularly through the use of newer hand held devices. We propose offering this new technology to physicians in rural settings through educational workshops and loaner hand held ultrasound units. SOM faculty and fellows would serve as instructors for the workshops.

f) Community Engagement

The FoodShare Fresh Food Box program which started in Richland County to help patients with type 2 diabetes mellitus improve nutrition by overcoming 3 main hurdles: fresh food access, affordability and nutrition education. Fresh produce will be delivered to participants in Orangeburg and Bamberg counties for $10 along with 45 minutes of diabetes tele-education designed to improve glycemic control and diabetes self-management.

g) Immunology Center

Staging for patients with hepatitis C disease and clinical advice on treatment will be provided by infectious disease specialists at the USC SOM. Accurate staging and identification of therapy is important to target treatment for hepatitis C which can be curative.

h) Remote Heart Failure Monitoring

A remote heart failure monitoring program will be implemented for patients living in rural counties in Sumter and surrounding counties (Kershaw, Lee, Darlington, Clarendon, Florence, Calhoun, and Williamsburg). A pulmonary artery pressure device will be used to remotely monitor patients with congestive heart failure. Early interventions can be made to avoid hospitalization by medication adjustments directed by the cardiologist.

i) USC School of Nursing

Conduct a palliative care demonstration project to expand access to palliative care services. This proposal builds off the School of Nursing's telehealth Palliative Care consultation at Beaufort Memorial Hospital in Beaufort, SC.

Despite the significant growth of palliative Care programs nationwide, and their proven efficacy in enhancing patient and family quality of life, patient and family satisfaction with care, and reducing hospitalization costs, access to and dissemination of these programs to the nearly 60 million US citizens living in rural or non-metropolitan areas have been grossly inadequate. A state-by-state report card on access to palliative care in many southern states, especially those with a large proportion of rural residents, received very low grades. The geographic inequities in access to palliative care are expected to rise as aging populations increase the demand due to increased life-limiting illnesses. Rural patients with serious illness remain vulnerable and at high risk of not receiving appropriate care. Especially during the last few months of life, rural patients may experience significant, unnecessary suffering that accessible palliative care could have alleviated. For this type of care to have a significant impact on health disparities for seriously ill patients and their families, these services must extend outside of acute care hospitals and end-of-life settings where the vast majority of palliative care specialists practice. Therefore, expanding access to palliative care in primary care community-based settings is needed.

This demonstration project will test a palliative care consult delivered by a palliative care physician (with a SC license) and/or Nurse Practitioner (NP) to patients with a serious illness attending a rural Federally Qualified Health Center (FQHC). All patients who have been diagnosed with a serious (including, but not necessarily, life-limiting) illness will be eligible for this service. Following the order for a consult by the healthcare provider, the palliative care physician or NP will conduct a consult with the patient and family member.

The consult generally takes an hour and includes assessment of and recommendations for: 1) the illness, 2) treatment prognosis, 3) preferences, decision-making styles, others to be included in decision making, and goals of care, 4) physical symptoms, social situation and social history, 5) support

systems and family/relational challenges, 7) psychological/emotional well-being and spiritual choices.

Following the consult, the physician/NP will provide a written report to the primary care provider with recommendations for meeting goals of care, symptom management and/or social/psychological/spiritual guidance. Patient scheduling with palliative care will take place within the FQHC with oversight and assistance from the program coordinator at USC. Portable Polycom equipment will be supplied to the FQHC by the College of Nursing for remote delivery of telehealth PC.

j) USC School of Pharmacy

The College of Pharmacy will develop services including teaching, clinical practice education, and research. First, the College of Pharmacy will develop an experiential teaching model in rural health care facilities or institutions. Second, it will develop a continuing medical program initiative to target rural pharmacies and healthcare clinics and institutions. Third, to address, incentivize, and produce pharmacists with a rural health focus, the College proposes a rural health pharmacy residency and pharmacy student internship. Finally, they will conduct an outcomes research model to provide assessment of above initiatives. The research will seek to answer and address inequities in rural health.

k) USC School of Public Health

The USC School of public health proposes to enhance delivery of healthcare in rural South Carolina using public health research by assessing the change in the primary care service delivery profile in South Carolina. Because hospital acquisition of primary care practices in South Carolina has paralleled national trends (Kutscher B. *Modern Healthcare*, June 20, 2015), increasing numbers of primary care practices across the state having been acquired by hospital systems. Multiple pressures, such as the technology and patient management requirements of Accountable Care Organizations and Patient Centered Medical Homes, are noted as causes for these trends. Informal estimates suggest that three quarters of rural primary care practices, exclusive FQHCs, are currently affiliated with hospitals rather than independent owners. Hospital ownership of primary care practices may be beneficial, increasing the access of rural residents to needed specialty services. Conversely, centralized systems may be less likely to accept Medicaid or uninsured patients, both of which are a larger proportion of the population in rural counties. At present, the effects of change in ownership and control of practices on the availability of primary care for rural residents are not known.

We will conduct a multi-method assessment of changes in the primary care delivery system in rural South Carolina to 1) determine the extent of practice acquisition, 2) assess patient level impact on travel for care and receipt of appropriate services. [Note: many Medicaid patients are currently served by FQHCs; changes may cause additional patients previously served by rural health clinics or other rural providers to seek care from FQHCs instead], and 3) provider

impact regarding perceived changes in the practice environment on patient mix, workload, and financial stability.

l) USC School of Social Work

The USC College of Social Work will develop and deliver a practice level team training program. Inter-professional teamwork is critical to developing high performing practices. Therefore, in collaboration with the SCORH and the USC College of Social Work we will develop an inter-professional Team Training course for rural practices. This will build on the work done by practice facilitators by giving a concentrated, on-site training course aimed at developing teamwork within rural practices. Scope of work will include course development, assignment of trainer teams, training delivery and evaluation. Deliverables will be number of practices where training occurs and training evaluation outcomes assessment. Initial target for number of practices trained will be thirty (30).

Continuing medical education	200,000
IT consulting and administrative costs	50,000
Telemedicine consultation	290,000
Onsite subspecialty support Budget (per clinic): $73,850 Office Rent - $16,700 Travel - $ 7,000 MD time - $20,000 Nurse Travel - $ 7,500 Meals - $ 2,650 Supplies - $10,000 Program Coordinators: Program Coordinators: $40,000 (* 1 Program Coordinator per 4 clinics)	2,000,000 (projected clinics: 10) 120,000
New Technologies ECHO Technologist Salary - $ 30,000 Travel - $ 6,000 Physician workshop time - $ 4,500 (30 hrs. @$150/hr.) Ultrasound devices - $80,000 (10 @ $8,000)	250,000
USC School of Nursing	250,000
USC School of Public Health	250,000
USC School of Pharmacy	250,000
USC School of Social Work	250,000
Administrative coordinator	90,000
Total	**4,000,000**

V. Funding Request Summary

Initiative	2017 Funding Request (recurring)
SC Center for Rural and Primary Healthcare 1. Center Funding ($1,500,000 recurring) 2. Scholarship and Loan Program ($2,690,000) 3. Pharmacy Extension Service ($800,000) 4. Winnsboro expansion ($400,000 initial, $300,000 recurring)	$5,390,000
Rural Residency Development Sumter	$500,000
ICARED Program 1. Continue existing ICARED service 2. Expand ICARED services	$4,000,000
Total	**$9,890,000**