

HEALTH SCIENCES SOUTH CAROLINA



INSPIRING

a Healthy South Carolina

HEALTH SCIENCES SOUTH CAROLINA

803.544.HSSC (4772)
www.healthsciencessc.org

2010 ANNUAL REPORT

2010 REPORT TO STAKEHOLDERS

At a Glance

Letter from the President6

Letter from the Chairman of the Board8

Highlighting Affiliates10

Spotlight:
HSSC Task Force for Health Care Transformation through Innovation (HCTI)12

Centers of Economic Excellence14

A Conversation with
Sue Levkoff, ScD, SM, MSW, CoEE Endowed Chair in Community and Social Support—SmartHOME™ 18

Major Initiative One:
Improving Quality at Physicians' Practices20

A Conversation with
Charles Bennett, MD, PhD, CoEE Endowed Chair in Medication Safety and Efficacy22

Major Initiative Two:
Enhancing Clinical Trials Participation in Underrepresented Populations24

A Conversation with
Zihai Li, MD, PhD, CoEE Endowed Chair in Cancer Stem Cell Biology26

Major Initiative Three:
Addressing Central-Line Blood Stream Infections (CLABSI)28

2010 Year in Review30

HSSC Staff Additions34

Looking Ahead36



We Are
INSPIRED
by Our Mission

The mission of Health Sciences South Carolina is to conduct collaborative health sciences research to improve the health status, education, workforce development, and economic well-being for all South Carolinians.

With regard to **Health Status**, we will accomplish this by:

- Translating research results into clinical practice
- Promoting wellness and implementing disease management programs to reduce disparities in health status
- Improving patient safety and clinical effectiveness

With regard to **Education and Workforce Development**, we will accomplish this by:

- Improving the quality of and access to health-related education
- Increasing the number of health-related professionals trained

With regard to **Economic Well-being**, we will accomplish this by:

- Attracting a significant increase in funding to South Carolina for health sciences research
- Attracting nationally prominent scientists to South Carolina, bringing intellectual property to stimulate the state's knowledge-based economy
- Creating and attracting health-related companies to South Carolina that will increase the number of highly skilled jobs

We Are
INSPIRING
 a Healthy
 South Carolina

Inspiration.
 Innovation.
 Transformation.

Our goal is to improve the health of every South Carolinian. We work to make physicians, hospitals, and South Carolinians, as a whole, more passionate about health and health care. We work to inspire physicians and nurses to make their practices more efficient and thus provide higher-quality care. We inspire hospitals to provide quality care and preventive programs to educate South Carolinians. We inspire researchers to be more creative. This will inspire South Carolina's citizens to be healthier.

WE ARE ENCOURAGING INNOVATION.

Health Sciences South Carolina is the nation's only statewide health sciences research collaborative and is committed to transforming South Carolina's public health and economic well-being through research. This collaborative approach to health care research is encouraging innovation and making a difference in our state's health.

WE ARE SEEING A TRANSFORMATION.

Great things are coming out of this collaboration. South Carolina is reaping the benefits of this inspiration and innovation, and our state and our citizens' health care will be transformed because of it.

Supporting Organizations



Affiliates



LETTER from the President



Jay Moskowitz, PhD
President & CEO, Health Sciences
South Carolina

DEAR STAKEHOLDERS,

Health Sciences South Carolina's (HSSC) first six years were filled with tremendous organizational growth and highly satisfying achievements due, in large part, to our partnership with The Duke Endowment. We formed a remarkable alliance with the state's Centers of Economic Excellence (CoEE) program, providing support to twelve health care-related CoEEs. We began building a one-of-a-kind service and technology infrastructure to enhance clinical research and patient care throughout South Carolina. HSSC joined forces with other leading health care organizations in the state to improve the quality of patient care. Most recently, HSSC prepared South Carolina to respond to health care reform and the Patient Protection and Affordable Care Act with nation-leading innovation. Our task force for "Transformation through Innovation" will generate, test, implement, and evaluate health system innovations to create a high-performance health, health care, and health research system in South Carolina that will be a model for the United States.

These activities are central to HSSC's mission—to improve the health status, education, workforce development, and economic well-being for all South Carolinians—and we will continue to vigorously support and execute them, along with our other numerous efforts.

In 2010, HSSC leadership began to shift focus slightly, directing more attention toward the study of the specific ways in which our assets—our outstanding human resources,

our tools and technology, and the information we gain from research, clinical studies, and the like—will ultimately affect the care that patients receive in South Carolina. As productive as we have been in gathering and building these assets, they can't improve the health and health care of our citizens unless we know how to disseminate the expanded knowledge obtained from our research and ensure the engagement and adoption of the advanced technology infrastructure we are building. For every good idea we develop, we must influence the habits and routines of all providers, from physicians to nurse's aides, in health care settings large and small, urban and rural, throughout the state.

To this end, HSSC is establishing a new infrastructure dedicated to implementation science; staff in this new program will be charged with determining how best to integrate changes in practice to ensure their quick and complete adoption. Specifically, implementation science staff will work closely with HSSC's clinical trials and evidence-based medicine staff to continuously search for new and promising evidence-based practices that improve patient care and health status or contain costs. Implementation science staff will evaluate the results of clinical trials, data-mining studies, and other innovations in the context of their delivery challenges to assess potential effects and applicability in South Carolina. They will then assess the readiness of health care providers to implement a particular innovation, considering issues such as the extent of local resources and professional support. Finally, implementation staff will mobilize stakeholders and the resources necessary to scale up interventions for widespread adoption.

It all comes down to ensuring that our focus is on patients.

Through this new emphasis on implementation science, we will be looking for opportunities to improve patient outcomes with regard to all aspects of health care, but we will place particular focus on three areas: 1) the management of chronic disease such as diabetes, cardiovascular disease, and stroke; 2) the elimination of harm associated with complex patient medication regimens, overuse of antibiotics, and adverse medication events; and 3) the delivery of safe and efficient care to an increasingly elderly and diverse population.

It all comes down to ensuring that our focus is on patients. All our brainpower, infrastructure technology, and research findings are worth less if, at the end of the day, their value can't be translated into healthier citizens in every part of South Carolina.

As always, I would like to thank The Duke Endowment for their critical support, the South Carolina General Assembly for their establishment and support of the Centers of Economic Excellence program, and the leadership of our supporting organizations and affiliates for their vision and dedication to HSSC. These organizations, along with the many other groups that have partnered with us over the past six years, have made our successes possible.

Jay Moskowitz, PhD
President & CEO, Health Sciences South Carolina

LETTER

from the Chairman of the Board



James F. Barker, FAIA
President, Clemson University
Chair, HSSC Board of Directors

DEAR FELLOW SOUTH CAROLINIANS,

There is much to be concerned about with regard to the health of our state. Our economic health is challenged by many forces, and our collective physical health is often noted in national statistical studies, with our high rates for life-threatening diseases, such as diabetes, heart disease, stroke, and cancer.

Yet I am full of hope about both our economic and physical health because they are tied together through the collaborative efforts of Health Sciences South Carolina. The combined forces of the state's major health care systems and our major research universities offer a unique approach first to identifying and ultimately to finding solutions for the many health challenges we face. We believe sharing information, collaborating on research projects, and working together for the good of all is in the best interest of our institutions, and it's a collaboration our citizens should expect.

Since 2004 Health Sciences South Carolina has established the foundation for a range of programs that foster cooperative multidisciplinary clinical research, innovative concepts of care delivery, and new models of education and training.

HSSC's vision is to advance the state's capacity to protect and improve the health of its citizens, independent of geographic location or socioeconomic status.

When HSSC was established in 2004, there was nothing else like it in the country. It is still a unique collaborative. No other state has been successful in bringing together its largest research universities and health systems as partners in such an extensive vision, let alone translating research discovery to improved patient care.

Our established and tested collaborative is the foundation for success in the implementation of a rapid-learning health care delivery system—an environment lacking in most other states. Health Sciences South Carolina has supported health care quality by forming alliances and integrated programs with leading public and private organizations in the state such as the Department of Health and Human Services, the Department of Health and Environmental Control, the SC Hospital Association, Siemens, and Premier, Inc., among others.

From day one, Health Sciences South Carolina has been focused on the future of health care. The collaborative continues to add partners and to expand its vision while remaining committed to serving all the citizens of South Carolina. Good health should not be limited to any economic class. It should not be dependent on education or good genes or just plain good luck. If our state's future is to be all that we hope, we must start with the common denominator of good health for all.

I am proud to say that Health Sciences South Carolina and its members are playing a critical role in making good health a priority and a reality.

James F. Barker, FAIA
President, Clemson University
Chair, HSSC Board of Directors

BOARD OF DIRECTORS

1 INGO ANGERMEIER, FACHE
PRESIDENT & CEO, SPARTANBURG
REGIONAL HEALTHCARE SYSTEM

2 JAMES F. BARKER, FAIA, CHAIR
PRESIDENT, CLEMSON UNIVERSITY

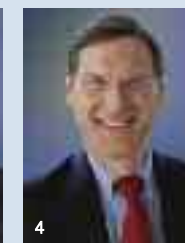
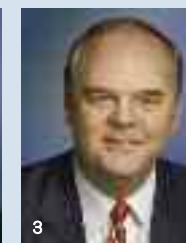
3 CHARLES D. BEAMAN, JR.
PRESIDENT & CEO, PALMETTO HEALTH

4 RAYMOND S. GREENBERG, MD, PhD
PRESIDENT, MEDICAL UNIVERSITY
OF SOUTH CAROLINA

5 JAY MOSKOWITZ, PhD
PRESIDENT & CEO, HEALTH SCIENCES
SOUTH CAROLINA

6 HARRIS PASTIDES, PhD, MPH
PRESIDENT, UNIVERSITY OF SOUTH CAROLINA

7 MICHAEL C. RIORDAN
PRESIDENT & CEO, GREENVILLE HOSPITAL
SYSTEM UNIVERSITY MEDICAL CENTER



HSSC Announces

NEW AFFILIATES

AnMed Health, McLeod Health,
Self Regional Healthcare

HSSC has added three new affiliates—AnMed Health, based in Anderson; McLeod Health, based in Florence; and Self Regional Healthcare, based in Greenwood.



McLeod Health



AnMed Health's cancer team meets weekly to discuss patient treatment and advancements in care.



Self Regional Healthcare's BrainSuite

These organizations join the existing supporting organizations Greenville Hospital System University Medical Center, Palmetto Health, Spartanburg Regional Healthcare System, Clemson University, the Medical University of South Carolina, and the University of South Carolina.

"We are extremely pleased to welcome these new affiliates,"

says Jay Moskowitz, HSSC president and CEO. "By contributing their expertise and resources to our efforts, they will add even more strength to HSSC's drive to improve public health and economic well-being in South Carolina through better health care and health research."

"This new partnership matches our strategic and organizational goals as

it relates to research, patient care, and quality," says John A. Miller, CEO of AnMed Health. "We are excited to join in the efforts of HSSC, and we look forward to contributing to the building of a stronger and healthier state."

"HSSC is truly to be applauded for their progress," says Senator Hugh Leatherman. "As the nation's first

statewide biomedical-research collaborative, they are continuing to improve the lives of all South Carolinians . . . The selection of McLeod Health into this group of research universities and major health care systems is further proof that McLeod continues to produce first-class medical services and professionals."

"Joining forces with HSSC . . . places us in the forefront of major efforts to expand information technology for the betterment of our patients," says James A. Pfeiffer, president and CEO of Self Regional Healthcare. "HSSC is also involved in clinical trials networks for cancer trials and other cutting-edge advances in medicine. Further, the collaboration is actively working on research to improve the quality of rural health care and to reduce health care-associated infections. We see these benefits as an asset to the Greenwood area."



AnMed Health Medical Center



McLeod Pavilion and McLeod Tower



Self Regional Healthcare



SPOTLIGHT:

HSSC Task Force for Health Care Transformation through Innovation

Leveraging the best of Health Sciences South Carolina

Cynthia Williams, MBA
Health Care Task Force Program Director

We are entering a new era in health care in which the health care system will be different. Providers will see roles altered and patients will expect and perceive changes.

The research continuum will become more personalized and population-based, and information technology systems will be critical. Through all of this, HSSC must position itself as a leader in this transition by looking for new roles in delivery systems, education/training paradigms, and research models.



The first step was to establish partnerships with potential collaborators for health care reform research and demonstration initiatives. This collaboration became the Task Force for Health Care Transformation through Innovation (HCTI), which is leveraging the best of HSSC to conceptualize and create an efficient, high-performance South Carolina health system, including health care and health research. The HCTI is doing this through the generation, testing, and evaluation of innovative ideas.

The task force includes members of the HSSC Policy Steering Committee (PSC), primary care providers from our supporting organizations and affiliates, members of our partner organizations, key leaders in South Carolina government, HSSC-supported Centers of Economic Excellence (CoEE) chairs, and others that the PSC recommends. In addition, HSSC is collaborating with the three organizations in South Carolina that have major health care reform-related initiatives underway:

- SC Hospital Association (SCHA)
- SC Public Health Institute (SCPHI)
- SC Chamber of Commerce

The HCTI supports collaboration because it helps each group clarify the goals and objectives of each initiative; minimize redundancy in resource utilization of team members; build a network of information sharing, both in South Carolina and outside of the state; use a common database for the Patient Protection and Affordable Care Act (PPACA) funding application and award tracking; maintain separation of efforts, where appropriate; and leverage combined efforts to successfully implement health care improvements for all South Carolinians.

HSSC HCTI Task Force Deliverables

The HSSC HCTI task force shall deliver:

- Four workgroup reports that outline the challenges of South Carolina's current health care system and possible solutions to be researched and evaluated. These workgroups include Economics of Care, Quality of Care, Workforce Development, and Data Collection, Integration, and Analysis.
- A prioritized list of the PPACA funding opportunities to be pursued and the collaborative teams that will work to formulate the grant proposals.
- A white paper outlining the positive impact health care reform may have on South Carolina citizens and the state's health care system, and the ways in which HSSC's research leadership will help achieve this impact.

Healthy South Carolina Vision Statement

(This vision statement is a result of the collaboration of the HSSC HCTI Task Force members.)

South Carolina will be the healthiest state (have achieved the most improvements in health and health care) in the United States by 2020. "Healthiest" is defined as showing the highest rates of improvement from current 2010 status in these three measures:

- 1) Improvements in health status of defined populations within our state
- 2) Improvements in patient access to medical homes, care processes, and clinical outcomes
- 3) Reductions in the health care cost burden on our state and its citizens

South Carolina will achieve this bold vision through a three-tiered strategy focused on:

- Tier 1:** Developing and implementing specific programs and interventions to eliminate new incidents of the major chronic disease drivers that present the state with the greatest cost and health status challenges.

Tier 2: Increasing the effectiveness and efficiency of care delivery and coordination within and across health systems for patients with defined major chronic diseases.

Tier 3: Increasing innovation in the transformation of South Carolina health care through leadership in interdisciplinary research, demonstrations, and provider education.

Ongoing Activities

- **Brokering:** HSSC is receiving daily RSS news feeds and emails from federal government sites on the latest PPACA funding activity.
- **Cooperating:** Along with the SC Medical Association (SCMA), HSSC, SCHA, and SCPHI representatives are meeting and collaborating on common health care reform efforts.
- **Analyzing:** Sub-group meetings are being scheduled to discuss areas needing special HCTI expert support (e.g., care provider financial impact and sociology studies, data management activity).
- **Communicating:** Regular communications are sent to the HCTI membership on PPACA-related activities and initiatives underway at HSSC's member and affiliate organizations.

Finally, the high-level project plan and evaluation framework has been completed. Select health care reform grants are being identified according to criteria and proposal teams will soon be initiated. HSSC will continue to work collaboratively with SCPHI, SCHA, and the SC Chamber of Commerce on health care reform efforts.

STEERING COMMITTEE

Libby Baxley, MD (Chair) Palmetto Health/University of South Carolina
 Jay Bearden, MD, FACP Spartanburg Regional Healthcare System
 Charles Bennett, MD, PhD University of South Carolina
 Emma Forkner, RN SC Department of Health and Human Services
 Anand Gramopadhye, PhD Clemson University
 Thornton Kirby, JD South Carolina Hospital Association
 Ellis Knight, MD Palmetto Health
 William Moran, MD (Vice-Chair) Medical University of South Carolina

Jay Moskowitz, PhD (Ex Officio) Health Sciences South Carolina
 Iain Sanderson, MSc, FRCA Medical University of South Carolina
 Jerry Youkey, MD (Vice-Chair) Greenville Hospital System University Medical Center
 David Hardison, PhD Science Applications International Corporation
 Peter Emerson, JD Recombinant Data Corporation
 Richard Larsen Health Sciences South Carolina
 Scott Hultstrand, JD South Carolina Medical Association

MEMBER ORGANIZATIONS

Clemson University (College of Nursing, Systems Research and Economics Depts.)
 SC Dept. of Health & Human Services
 Greenville Hospital System University Medical Center
 SC Dept. of Insurance
 Medical University of South Carolina
 SC Office of Rural Health
 Palmetto Health
 AARP SC

Spartanburg Regional Healthcare System
 SC Voices for Patient Safety
 University of South Carolina (Medicine, Public Health, and Business Schools, and College of Nursing)
 SC Public Health Institute
 AnMed Health
 BlueCross BlueShield
 Self Regional Healthcare
 Haynsworth Sinkler Boyd, P.A.
 McLeod Health

Lovelace Family Practice
 SC Hospital Association
 Lakelands Rural Health Network
 SC Primary Health Care Association
 SC Fair Share
 SC Nurses Association
 disAbility Resource Center
 Eau Claire Community Health Center
 SC Medical Association

12 CENTERS OF ECONOMIC EXCELLENCE

at South Carolina's Research-Intensive Universities



The Centers of Economic Excellence (CoEE) program

was created by the

South Carolina legislature in 2002 and is funded through South Carolina Education Lottery proceeds. The legislation authorizes the state's three public research institutions, Clemson University, the Medical University of South Carolina, and the University of South Carolina, to use lottery funds to create Centers of Economic Excellence in research areas that will advance South Carolina's economy and create jobs. Each center is awarded from \$2 million to \$5 million in lottery funds, which must be matched on a dollar-for-dollar basis with non-state investment. To date, a total of 49 Centers of Economic Excellence or "CoEEs" have been created and 34 CoEE Endowed Chairs,

internationally regarded scientists and engineers, have been recruited to lead the centers. The CoEE program has resulted in more than \$363 million in non-state investment in South Carolina and has attracted or created more than 4,700 new jobs.

HSSC and its member organizations have supported the CoEE program since 2004. HSSC supports health care-related Centers of Economic Excellence through organizational and financial support, facilities, equipment, and talent. HSSC members have invested millions of dollars as matching funds and helped secure other financial benefactors, notably The Duke Endowment, which awarded \$21 million to the Center for Healthcare Quality in 2006. HSSC now supports 12 Centers of Economic Excellence and 16 CoEE Endowed Chairs.

Brain Imaging CoEE

Joseph Helpern, PhD
CoEE Endowed Chair in Brain Imaging
Medical University of South Carolina

PARTNERS

Greenville Hospital System University Medical Center
Palmetto Health (McCausland Center for Brain Imaging)

Medical University of South Carolina
University of South Carolina



Cancer Stem Cell Biology and Therapy CoEE

Zihai Li, MD, PhD
CoEE Endowed Chair in Cancer Stem Cell Biology
Medical University of South Carolina

PARTNERS

Clemson University
Medical University of South Carolina



Childhood Neurotherapeutics CoEE

Rosemarie M. Booze, PhD
Director * CoEE Endowed Chairs to be recruited.
University of South Carolina

PARTNERS

Greenville Hospital System University Medical Center
Medical University of South Carolina
University of South Carolina



Health Facilities Design and Testing CoEE

David J. Allison, AIA
Director * CoEE Endowed Chairs to be recruited.
Clemson University

PARTNERS

Clemson University
Medical University of South Carolina
Spartanburg Regional Healthcare System



Clinical Effectiveness and Patient Safety CoEE

John J. Schaefer, III, MD
Lewis Blackman Endowed Chair for Patient Safety
Medical University of South Carolina

Jihad H. Obeid, MD
CoEE Endowed Chair for Bioinformatics
Medical University of South Carolina

Rita Snyder, PhD, RN
CoEE Endowed Chair for Clinical Effectiveness and Patient Safety
University of South Carolina

PARTNERS

Clemson University
Medical University of South Carolina
Spartanburg Regional Healthcare System

Greenville Hospital System University Medical Center
Palmetto Health
University of South Carolina



Healthcare Quality CoEE

Jay Moskowitz, PhD
CoEE Endowed Chair for Translational Research
University of South Carolina

Iain Sanderson, MSc, FRCA
CoEE Endowed Chair for Medical Informatics
Medical University of South Carolina

PARTNERS

Clemson University
Medical University of South Carolina
Spartanburg Regional Healthcare System

Greenville Hospital System University Medical Center
Palmetto Health
University of South Carolina



Medication Safety and Efficacy CoEE

Charles Bennett, MD, PhD
 CoEE Endowed Chair in Medication Safety and Efficacy
 University of South Carolina



PARTNERS

Medical University of South Carolina
 University of South Carolina

Molecular Proteomics for Cardiovascular Disease and Prevention CoEE

Michael R. Zile, MD
 Director * CoEE Endowed Chairs to be recruited.
 Medical University of South Carolina



PARTNERS

Clemson University
 Spartanburg Regional Healthcare System
 Medical University of South Carolina
 University of South Carolina

Technology Center to Enhance Healthful Lifestyles CoEE

Frank Treiber, PhD
 CoEE Endowed Chair in Technology Applications to Prevent and Manage Disease and Reduce Risk
 Medical University of South Carolina



PARTNERS

Medical University of South Carolina
 University of South Carolina

SeniorSMART CoEE

Sue Levkoff ScD, SM, MSW
 CoEE Endowed Chair in Community and Social Support—SmartHOME®
 University of South Carolina



PARTNERS

Clemson University
 Medical University of South Carolina
 University of South Carolina
 Greenville Hospital System University Medical Center
 Palmetto Health

Stroke CoEE

Robert J. Adams, MS, MD
 CoEE Endowed Chair for Stroke
 Medical University of South Carolina

Marc Chimowitz, MD
 Countess Alicia Paolozzi Endowed Chair in
 Translational Neurology
 Medical University of South Carolina

Souvik Sen, MD
 CoEE Chair in Stroke Neurology
 University of South Carolina



PARTNERS

Greenville Hospital System University Medical Center
 Medical University of South Carolina
 Palmetto Health
 University of South Carolina

Regenerative Medicine CoEE

Richard E. Swaja, PhD
 CoEE Endowed Chair for Regenerative Medicine
 in Stem Cell Technology
 Medical University of South Carolina

Martin Morad, PhD
 BlueCross BlueShield of South Carolina Endowed
 Chair in Cardiovascular Health
 University of South Carolina

Xuejun Wen, MD, PhD
 Hansjörg Wyss Endowed Chair Professor in Regenerative Medicine
 Clemson University

PARTNERS

Clemson University
 Medical University of South Carolina
 University of South Carolina



HSSC Welcomes New CoEE Endowed Chairs



As the CoEE Program and HSSC have matured, the research environment in South Carolina has become more attractive to some of the world's top scientists. As a result, several leading health care researchers have chosen to move their research and research teams to South Carolina.

Charles Bennett is working to prevent adverse drug events and to improve drug safety in South Carolina and beyond. He has been recruited to lead the CoEE in Medication Safety and Efficacy, which studies the effects of prescription and over-the-counter medications, particularly on children and the elderly.

Joseph Helpern is a true pioneer in the medical imaging field who is working to establish a nation-leading imaging center in South Carolina. He holds four patents related to imaging techniques and his personal research activities focus mainly on using MRI to investigate neurodegenerative diseases such as Alzheimer's, ADHD, and stroke.

Sue Levkoff was named as endowed chair for the SeniorSMART® CoEE this year. She has come to South Carolina from Harvard University and is regarded as a leading expert on geriatrics and aging. She and her team are working to develop technologies that enable older adults to remain at home and that provide support for caregivers.

Zihai Li is considered a rising star in the field of cancer immunology, one of the most innovative and promising fields in cancer research. He leads the CoEE in Cancer Stem Cell Biology and is working to develop safe and effective cancer vaccines, to uncover the power of stem cells for cancer therapy, and to decode the mystery of how the immune system works to defend against a variety of diseases.

Souvik Sen is working to develop an advanced stroke center that will be the first of its kind in South Carolina's Midlands. His research areas include acute stroke treatment (treating strokes within hours of onset) and cardio-embolic strokes (strokes caused by blood clots that develop in the heart and travel to the brain).

Frank Treiber has been recruited to lead the Technology Center to Enhance Healthful Lifestyles. He is working to develop technology that will help citizens from all segments of society, but especially rural and underserved populations, make healthier lifestyle choices with the goal of reducing health disparities.



A CONVERSATION WITH

Sue Levkoff, ScD, SM, MSW

*CoEE Endowed Chair in Community and Social Support—SmarHOME™
University of South Carolina*

In 2010, USC recruited a top expert in geriatrics to help lead its SeniorSMART® Center of Economic Excellence, which is supported by HSSC.

Sue Levkoff and her research team are developing new technologies to help older adults maintain independence. At right, Levkoff discusses her work.



*A senior at the SeniorSMART®
Center of Economic Excellence*

Q. Why did you choose to leave Harvard University to come to South Carolina?

A. All the years I lived in Boston, whenever someone would ask me where I'm from, I would always say "South Carolina." I was born and raised in Charleston—it definitely feels like I'm finally coming home, and it feels wonderful. This is an opportunity for me to not only come back, but also to give back. The timing could not be more ideal.

Q. What is your vision for the SmartHOME™ component of SeniorSMART®?

A. My vision for SmartHOME™ is not only to develop and promote technologies and services to enhance the physical and social well-being of older adults, but also to train a workforce to coordinate and manage these technologies and services. We plan to reach all over the state, including rural areas, to provide the training needed to enlarge the workforce of direct care workers.

Q. How did the CoEE program and HSSC play a part in your decision to relocate to South Carolina?

A. The overarching structure for the CoEE program is so unique, I am not sure that everyone recognizes how special this vision really is. Traditional science has tended to take place in silos, with each scientist working toward his or her own discoveries. Through the CoEE program, we are not only expected to tear down the walls of our individual silos and collaborate across disciplines, but also we have the incredibly unique opportunity to collaborate with the state, with other research universities, with the private sector, and with some of the largest health systems through HSSC. The fact that South Carolina had the wisdom to bring together academia, government, and the business community was a big draw for me to relocate here.

Q. You are one of three endowed chairs who will lead SeniorSMART®. Why is this interdisciplinary structure important?

A. It's very significant that three endowed chairs have been created within SeniorSMART®: one in medicine, another in engineering, and the one that I hold, in social work. This interdisciplinary structure will ensure that

the applications we develop are effective, practical, and targeted appropriately. Clinicians understand the physiology of the aging body, engineers will make sure that our products are functional, and the social work voice will help ensure that we develop products that older adults not only need, but [find] acceptable. It doesn't matter how perfectly engineered a product might be—if it is stigmatizing to use, it will sit on a shelf, and be of no benefit.

Q. Can you tell us about some of the innovative technologies you and your team are developing?

A. Before I arrived, several members of the SeniorSMART® team had already begun working on several innovative technologies. For example, Deb Krotish, PhD, an exercise scientist, and Victor Hirth, MD, a geriatrician, have been collaborating with Juan Caicedo, PhD, a civil engineer, to develop and test a fall detection monitoring system that uses sensors in the environment and can be used in assisted living facilities as well as individual homes. When a fall occurs, an alarm system alerts a caregiver so that he or she can respond immediately. Research shows that when older adults fall, the longer they are down, the harder time they have recovering.

Q. I understand that you have brought a new company to South Carolina. Please tell us more about that.

A. I am pleased to say that I am bringing a company I started with my husband, Environment and Health, to South Carolina with me. We are setting up a site in Columbia, and have already submitted several grants, with more in the pipeline, to develop new products to enable older adults to age safely in place, in their communities, for as long as humanly possible. We are also working on a health care technology program to reduce Medicare costs by targeting workers aged 55 to 64 to improve their health before they reach the age of Medicare eligibility, and were recently funded to provide remote monitoring for rural older adults with congestive heart failure to identify and deliver interventions that would reduce hospital admissions and emergency room visits.

Major Initiative ONE

IMPROVEMENT IN PHYSICIANS' PRACTICES



HSSC is involved in many improvement initiatives—from simplifying the clinical trials process to building a comprehensive health IT infrastructure to support clinical and research activities across the state. Each of these initiatives is ultimately about improving the quality and safety of patient care to ensure that South Carolina citizens are healthier.

Several HSSC activities are meant to improve quality at one of the most common points of care—the physician's office. These efforts present an opportunity for HSSC and its member institutions to make a more direct impact on patient health.

One of the most significant point-of-care initiatives thus far has been HSSC's establishment of an extension center to help doctors' offices select and implement electronic health record systems, or EHRs. HSSC received a \$5.6 million grant from the US Department of Health and Human Services to support this effort (see article, p. 30).

According to HSSC staff member and clinical advisor Peter Carek, who is also a professor of family medicine at the Medical University of South Carolina, the adoption of EHR systems in physicians' offices across the state will improve care by 1) organizing all patient information in one location; 2) providing health care professionals with helpful information, such as diagnostic guidelines or treatment recommendations, while the patient is in the office; 3) providing health care providers with prompts for additional

steps needed to monitor a patient's disease or provide preventive care for a specific condition; and 4) allowing physicians to create registries and reports that indicate when particular patients need additional visits or services.

HSSC is also supporting the development of a statewide health information exchange (HIE). Carek says that SCHIEx, South Carolina's HIE, will allow health care providers across the state, including not only doctors' offices but hospitals, clinics, and other care facilities, to have immediate access to a patient's medical records no matter where the patient has previously been treated.

"The potential for this initiative to have significant outcomes is very large," says Carek.

Yet another HSSC initiative that will directly improve quality and safety of care in physicians' practices is a collaborative program called Experience in Quality Improvement for Practice in Primary Care (EQiP PC).

The program involves South Carolina Area Health Education Consortium (SC AHEC)—affiliated family medicine residency programs

and their associated practices. Both faculty and residents are making quality improvement efforts a central part of patient care, with a focus on achieving measurable process and clinical care outcome improvements in the areas of diabetes, heart disease and stroke, hypertension, and preventive services.

HSSC initiated the two-year program in 2009 and provides both oversight and funding.

Roughly half of the graduates from SC AHEC residency programs remain in South Carolina to practice; thus the positive impact of the EQiP PC program on the health and safety of the state's patients will continue to grow.



Peter Carek, MD, MS
Professor of Family Medicine
Medical University of South Carolina

"The potential for this initiative to have significant outcomes is very large," says Carek.

POLICY STEERING COMMITTEE

1 Gerald Sonnenfeld, PhD
VP for Research and Economic Development
Clemson University

2 Jerry Youkey, MD (Chair)
VP Medical and Academic Services
Greenville Hospital System

3 James Bearden, MD, FACP
VP Clinical Research
Spartanburg Regional Healthcare System

4 Mark Sothmann, PhD
Interim Provost
Medical University of South Carolina

5 Stephen Kresovich, PhD (Vice Chair)
Vice President for Research and Graduate Education, University of South Carolina

6 Jim Raymond, MD
Sr. VP for Quality, Medical Ed & Research
Palmetto Health

7 Mike Tillirson, DO
Executive VP and Chief Medical Officer
AnMed Health

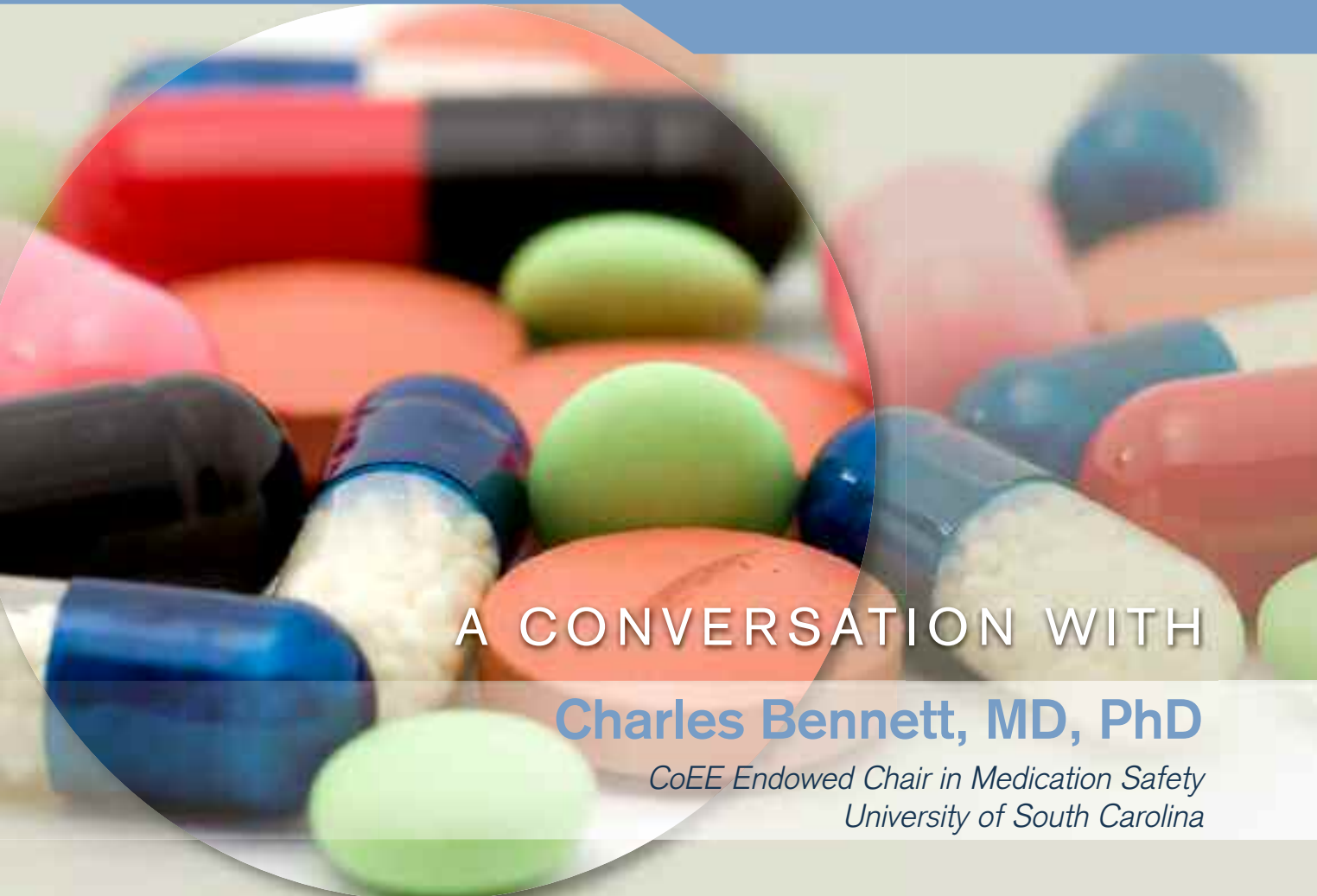
8 Greg Mappin, MD
VP Medical Affairs
Self Regional Healthcare

9 Etta Pisano, MD
Vice President for Medical Affairs
Dean, College of Medicine
Medical University of South Carolina

10 Richard Hoppmann, MD
Dean, School of Medicine
University of South Carolina

11 Donna Isgett, RN
Vice President of Clinical Effectiveness
McLeod Health





A CONVERSATION WITH
Charles Bennett, MD, PhD
*CoEE Endowed Chair in Medication Safety
 University of South Carolina*

In 2010, South Carolina recruited one of the nation's leading medication safety experts, Charles Bennett, to lead the HSSC-supported Center of Economic Excellence in Medication Safety and Efficacy.

Adverse drug reactions are a serious health problem, costing billions of dollars and hundreds of thousands of lives each year.

At right, Bennett talks about why he chose to come to South Carolina and discusses his current work.



Q. Why did you decide to come to South Carolina?

A. Coming to South Carolina was a tremendous opportunity. It is the only state in the country investing in medication safety and, by coming here, I recognized the chance to make a big difference in the field.

Q. Did the state's Centers of Economic Excellence program play a part in your decision?

A. It played a huge part in my decision. CoEE showed that South Carolina has a commitment to innovation at the highest levels. The state has a broad vision and a lot of opportunity for cross-fertilization of ideas among the research universities, through HSSC, and with other partnerships that exist in the state.

Q. I understand that you have personal experience that drives your passion for medication safety. Could you please tell us more about that?

A. When my father was 78, he underwent a cervical corpectomy—the same surgical procedure actor Christopher Reeve went through after injuring his neck in a horseback fall a year earlier. The surgery went well, but the next day my father had a myocardial infarction (heart attack) and the doctors put him on the blood thinner, heparin, to prevent a possible blood clot. That evening, I was sitting with my dad and brother watching a late night talk show when my dad said that he could no longer feel his legs. Neither my father or brother knew what that meant, but I knew instantly. The thin blood had resulted in a bleed into the surgical site. He had now transected his spinal cord.

My father's last words were the next day, right before an emergency procedure failed to reverse the damage. My father lived for several months as a quadriplegic, on a respirator and feeding tube. The heparin caused my father's bleed—but he was in a very difficult circumstance. The occurrence of potentially fatal side effects of drugs became my life's calling. I want to decrease the chances that other families will lose a loved one as a result of a fatal side effect of a drug.

Q. Please tell us about SONAR, the drug safety program you founded.

A. SONAR (Southern Network on Adverse Reactions) is a clinically based program that systematically investigates and disseminates information describing serious and previously unrecognized adverse drug and device reactions. Its work has identified 43 serious adverse effects. The manufacturers of these drugs include a Who's Who of industry (General Electric, Johnson and Johnson, Sanofi-Adventis, Roche, Genentech, AMGEN, Pfizer, Eli Lilly, and Novartis, to name a few). Adverse drug reactions are a serious health problem. They are among the top 10 leading causes of death, with 100,000 people dying each year, and result in \$3.6 billion a year in health care costs.

Q. Tell us about the work you are doing at the CoEE for Medication Safety and Efficacy.

A. We have put the "pedal to the metal" at the center, creating a consortium and bringing together resources in a large way. For example, we are collaborating with a private-sector company that focuses on data mining related to adverse drug reactions. We are also working with HSSC on developing an electronic data warehouse, a statewide repository for clinical data. In addition, we are working with poison control centers around the state since a lot of medication safety issues get called into poison control centers, and we're working with MUSC's Hollings Cancer Center to look at the safety of cancer pharmaceuticals, probably the only such effort in the country. We are also actively involved in being responsive to individual adverse drug reactions in the state. For example, a person on campus at MUSC had a serious unexplained clinical episode after a colonoscopy. We were able to help identify a potentially fatal drug side effect that could have affected a lot of people.

Major Initiative TWO

ENHANCING CLINICAL TRIALS PARTICIPATION IN UNDERREPRESENTED POPULATIONS



A patient participates in a life-saving clinical trial at MUSC.

Increasing clinical trials participation in South Carolina is an important focus area for HSSC. These trials offer hope to patients and families and also provide tremendous opportunities for research collaboration and investment. Furthermore, creating a strong clinical trials infrastructure can enhance the state's marketability to national and international medical investigators such as pharmaceutical companies.

In 2010, HSSC embarked on a study with USC's Arnold School of Public Health and College of Mass Communications and Information Studies to find ways to increase clinical trials participation among underrepresented groups. Enrollment in clinical trials is particularly low in rural areas, making that population largely underrepresented in medical research.

According to the director of the study, Sei-Hill Kim, associate professor in USC's School of Journalism and Mass Communications, researchers first will explore potential target audiences, examining which populations and regions in rural South Carolina are most eligible for, but largely underrepresented in, clinical research. Next, they will examine why trial participation is low in rural areas, looking particularly at the cognitive and psychological reasons. HSSC researchers will then analyze the communication mechanisms by which clinical trials information is disseminated and examine the content of the messages.

"We believe the findings from this study will help us ensure that a statewide clinical trials program benefits all of the state's citizenry, including people living at a distance from academic medical centers and large teaching hospitals," explains HSSC President and CEO Jay Moskowitz.

"It has long been demonstrated that rural citizens experience significant health disparities, with factors such as limited access to health care services, lower rates of health insurance, lower socioeconomic and educational status, and cultural and social differences contributing to these disparities," Kim says. "Given that clinical trials can provide patients with the most advanced medical treatments and screening options, the rural population in South Carolina may represent those who need the opportunity most."

Kim says the study is also important because not having certain portions of the population participate in clinical trials may pose a public health concern.

"Cutting-edge techniques in prevention and therapy are not equally accessible or utilized by those experiencing the highest disease incidence, further exacerbating the existing health disparities among the underserved rural population," he explains.

The HSSC project to enroll more underrepresented patients in clinical trials in South Carolina will last three years, running until 2013. Kim notes that it will differ from previous studies, which have mostly addressed structural and procedural barriers including lack of information about available trials, limited accessibility, or insurance issues.

"We believe that perhaps equally important, but largely under researched, are the cognitive and psychological factors that may influence the decision-making process for participation in clinical trials," Kim says. "Many rural residents in South Carolina are largely less educated, less sophisticated, and thus probably less knowledgeable about participating in clinical

trials. It is reasonable to expect that the rural poor are in general more skeptical than others about clinical research. The abuses in the past (for example the Tuskegee syphilis study), combined with perceived discrimination, indifference, and disrespect, have all contributed to the distrust and fear of the medical care system among minority populations."

The study is also unique, Kim notes, because it is multidisciplinary and combines the public health issue (clinical trials) with communications strategies. Helping Kim lead the study are Andrea Tanner of the USC School of Journalism and Mass Communications and Daniela Friedman of the Arnold School of Public Health at USC. Kim, Tanner, and Friedman are all members of the Science and Health Communications Research Group, a multidisciplinary effort spearheaded by the USC School of Journalism and Mass Communications.

Findings from the study will be used to develop and assess a pilot education program about clinical trials in rural South Carolina and could be helpful to other rural areas as well.

As Kim explains, "It is our hope that well-designed and population-specific strategies and public education will together enhance participation in clinical trials by rural and underserved patients."



*Sei-Hill Kim, MA, PhD
Associate Professor
USC School of Journalism
and Mass Communications*



*Andrea Tanner, MA, PhD
Associate Professor
USC School of Journalism
and Mass Communications*



*Daniela Friedman, MSc, PhD
Assistant Professor
Department of Health Promotion,
Education, and Behavior
Arnold School of Public Health at USC*

Tanner and Friedman are helping to lead the initiative with Kim.

Facts about South Carolina's RURAL POPULATION:

- 39.5% of South Carolina's population lives in rural areas, compared with 21% nationally (U.S. Census Bureau).
- 25 of 46 counties are designated as Medically Underserved Areas.
- Per capita income for rural areas of the state is \$23,344, more than \$11,000 less than the national average (U.S. Department of Commerce).
- Nearly 30 percent of rural adult South Carolinians lack a high school diploma (U.S. Census data).



A CONVERSATION WITH

Zihai Li, MD, PhD

*CoEE Endowed Chair in Cancer Stem Cell Biology
Medical University of South Carolina*

Zihai Li is working to find ways to use the human immune system to treat and prevent cancer. He leads the HSSC-supported Center of Economic Excellence in Cancer Stem Cell Biology at MUSC.

At right, Li discusses his work and why he chose to come to South Carolina.



Q. Why did you decide to come to South Carolina?

A. As a medical oncologist and tumor immunologist, I was attracted to the Medical University of South Carolina for its tremendous growth in biomedical research, culminating in the accomplishment of the National Cancer Institute-designation status for Hollings Cancer Center (HCC) and the award of a highly competitive Clinical and Translational Science Award from the National Institutes of Health in 2009.

Q. Tell us a little about the work you are doing at the CoEE in Cancer Stem Cell Biology.

A. I will be pursuing work at multiple fronts in the basic understanding of how the immune system can be harnessed to combat cancer. My areas of interest include developing safe and efficient cancer vaccines, uncovering the power of stem cells for cancer therapy, and decoding the mystery of basic guiding principles of how the immune system works in the body's defense against diseases.

Q. How do you see that your work can improve health care quality in South Carolina?

A. I want to move our work closer and closer to finding a cure for human cancer. These efforts in biomedical research could lead to the launch of clinical trials, and eventually the development of novel diagnostics and therapeutics for human diseases, which will likely improve health care quality in South Carolina and beyond.

Q. I understand that you published a study last year showing how human cells could be used as a vaccine for cancer. Could you please tell us more about that?

A. We found that the injection of undifferentiated stem cells can immunize animals to generate protective immunity against colon cancer. This has generated some interest in the field to use stem cells as cancer vaccines. However, this research is just in the beginning stage.

Q. What potential economic benefits do you see from your work?

A. Our work will stimulate job growth in the health care industry and biomedical research.

Q. How are you partnering with other researchers at Hollings Cancer Center?

A. I am very interested in collaborating with other investigators in the HCC to advance our common interests. For example, we are collaborating with a group led by Charles Smith, PhD, in discovering small molecular compounds to antagonize inflammation and cancer. We are also working with Kenneth Tew, PhD, DSc, and Yefim Manevich, PhD, to examine the roles of oxidative stress in cancer and inflammation. I am working closely with the cancer immunology group to discover novel mechanisms of immune tolerance and to develop new cancer immunotherapeutic strategies.

Major Initiative THREE

ADDRESSING CENTRAL-LINE BLOOD STREAM INFECTIONS (CLABSI)



Front row: Kathy Bryant, RN, CIC Manager, Infection Prevention, Spartanburg Regional Medical Center; Connie Steed, MSN, RN, CIC Director, Infection Prevention and Control, Greenville Hospital System University Medical Center; Ruby Bowen, MSPH, CIC Infection Control Manager, Palmetto Health Baptist. Back row: Beth Rhoton, RN, CIC Infection Prevention and Control, MUSC.

The SC Healthcare Quality Trust, made possible by The Duke Endowment, was formed in February 2009. The Trust determined that addressing central-line blood stream infections (CLABSI) was a good initial priority due to achievability, high mortality, and cost. (The CDC estimates that 30,000 to 60,000+ people die from CLABSI in the United States each year).

Key stakeholders of the Trust formed a hospital-acquired infection (HAI) committee composed of representatives from HSSC's four major health care systems (infection prevention RNs and hospital MD epidemiologists), university partner investigators (from the colleges of medicine, pharmacy, public health, nursing), the SC Hospital Association, the SC Department of Health and Environmental Control, and Premier, Inc.

(Note: Premier collects and analyzes clinical and financial data from its member hospitals and facilitates identification of best practices to improve patient outcomes. The research study was funded by HSSC).

Baseline data reported by Premier for the period October 2007 through September 2008 indicated there were 437 cases of CLABSI in the four HSSC health systems (eight hospitals). The average rate of CLABSI as a percentage of total patients with central-line insertions was 6.56%.

The consortium of stakeholders aligned efforts to address reduction of CLABSI. Spearheaded by the SCHA, 21 hospitals in South Carolina enrolled in the second cohort of a multi-state learning collaborative program led by the Johns Hopkins Research Group, "On the Cusp: Stop BSI," to implement

evidence-based protocols related to 1) establishing a culture of safety; 2) central-line insertion; and 3) central-line maintenance. All HSSC's partner hospitals are participants, and so far in South Carolina, the program has been initiated in 21 hospitals with 46 ICU and non-ICU care teams participating.

Janet Craig, extramural program officer for HSSC, says that as a result of these collective efforts, significant reductions in CLABSI infections have been observed compared with the baseline figures. For example, in the year after baseline data was gathered, the Premier database indicated that the number of patients with CLABSI was 191, or 1.3% percent of central-line insertions, which translates to a 56% reduction and 246 fewer SC patients who experienced harm caused by this hospital-acquired infection. A similar reduction was observed for HSSC partner hospitals, for which critical care CLABSI occurrences per 1,000 central-line days (the method used by the CDC to calculate rates) dropped from 4.6 to 1.8. For the 21 hospitals participating in the "Stop BSI" program, the CLABSI rate per 1,000 central-line days has dropped from 2.2 to 1.5, which represents a 31% improvement. The risk-adjusted mortality for CLABSI in HSSC hospitals now compares well to the sample of all US hospitals in Premier's database.

During the past year HAI committee investigators from the USC College of Pharmacy completed an investigation of the risk factors associated with CLABSI in hospitals nationwide compared to South Carolina using Premier's database of 600+ hospitals. The sample of 1.4 million discharges nationally, and 57,653 discharges in South Carolina, covered a five-year period through 2008 and included both ICU and non-ICU patients.

The findings indicated:

- CLABSI rates are as high outside of the ICU as they are inside.
- Patients' risk of dying increases significantly with CLABSI as does their cost of care.
- SC occurrence rates through 2008 were slightly lower than the national rate, but mortality and costs were greater.
- Patient-specific risk factors include age, sex, length of catheterization, number of procedures, and duration of hospital stay.

The research, which is being updated through 2010 to reflect the multiple national efforts to eliminate CLABSI, has been accepted for presentation by Dana Stafkey-Mailey, PhD, of the USC College of Pharmacy at the Society for Healthcare Epidemiology of America (SHEA) 2011 Annual Scientific Meeting

In the past year the HAI committee decided to affiliate with the SHEA research network, and Craig says through this effort, our SC clinicians and investigators will have multiple opportunities to participate in national research projects aimed at eliminating health care-associated infections in our population.



Janet Craig, DHA, MBA, RN
Extramural Program Officer
HSSC
Associate Professor
School of Nursing
Clemson University

Susan DeVore
President & CEO
Premier, Inc.



Lorri Gibbons
Vice President of Quality Improvement and Patient Safety, South Carolina Hospital Association
Lorri is an HAI committee member and the State Coordinator Lead for the Stop BSI Project.



Left to right: Brandon Bookstaver, PharmD Clinical Specialist and Asst. Professor of Infectious Diseases, Clinical Pharmacy, USC; Amber Taylor, Healthcare Associated Infections Epidemiologist, SCDHEC; Janet Craig; and Michael (Shawn) Stinson, MD (HAI committee chair) VP for Clinical Quality and Patient Safety, Palmetto Health.



The collaboration is made up of representatives from all over the state, including HSSC's four major health care systems, SC DHEC, the SC Hospital Association, and university partner investigators.

2010 Year in Review

HSSC wins \$5.6 million grant to promote adoption of electronic health records

Health information technology can improve health care quality while controlling costs, but implementing such IT systems can be complex and difficult for primary care physicians. HSSC is helping to solve that problem thanks to a \$5.6 million grant from the US Department of Health and Human Services to help implement electronic health record (EHR) systems in doctor's offices across the state.

With the grant funding, HSSC established a regional extension center program called CITIA-SC (short for the Center for Information Technology Implementation Assistance in South Carolina). CITIA-SC will help the state's primary care practices select certified EHR products, implement the systems, and train staff so that each practice and its patients get the maximum benefit in terms of improved care, safety, and efficiency.

The \$5.6 million grant was a highly competitive award made available through the American Recovery and Reinvestment Act of 2009. Before applying, HSSC worked with the SC Department of Health and Human Services to hold seven statewide health IT summits and received input from

as many organizations and individuals as possible—that allowed for a single strategy for South Carolina. "This collaborative effort is ultimately what won the \$5.6 million for our state," says HSSC President and CEO Jay Moskowitz.

Important partners in CITIA-SC include the SC Hospital Association, SC Office of Rural Health, SC Office of Research and Statistics, SC Primary Health Care Association, AccessHealth SC, SC Area Health Education Consortium, the Carolinas Center for Medical Excellence, Lakelands Rural Health Network, the SC Technical College System, and numerous physicians and health systems.

HSSC staff Michael Randall and Todd Thornburg managed a rigorous, multi-stage evaluation process (based on the NIH peer-review process) involving a 26-member review panel to determine which EHR vendors would be certified in the first of three selection rounds. Each vendor completed multiple surveys with hundreds of questions, demonstrated how their product worked in various patient scenarios, and submitted initial proposals

for review and revision before submitting final proposals. CITIA-SC's review panel is composed of primary care physicians with experience in electronic health records as well as professionals who have expertise in areas relevant to EHR systems such as IT infrastructure, purchasing, implementation, and use within a primary care practice setting.

CITIA-SC's goal is to enable 1,000 primary care physicians in South Carolina to adopt EHR systems and use them in a meaningful way per federal guidelines. Meaningful use means that a physician is using health IT to improve the quality and safety of health care services, deliver care

in an efficient manner, and reduce health disparities.



Todd Thornburg, PhD
HSSC Senior Program
Manager

Electronic review technology will enhance research efficiency and cooperation

HSSC's electronic institutional review board (eIRB) system is now operational at all six HSSC supporting organizations.

The eIRB system allows researchers to complete critical paperwork for clinical trials online, making the administrative aspects of research faster and easier and supporting collaborative research among HSSC member organizations. South Carolina is among the first states in the nation to implement such a system.

Traditionally, a review board will use paperwork submissions to evaluate the efficacy and safety of clinical trials involving human subjects. The eIRB system is a paperless way for the health research community to submit, track, and review required scientific, regulatory, and compliance information and to share information about amendments, protocol events, and continuing reviews. The eIRB system is efficient, secure, and "green." It also makes HSSC and South Carolina more competitive in attracting research funding and commercial clinical trials.

Inspiration.
Innovation.
Transformation.

Clinical Data Warehouse will boost research efforts, personalize medicine

A central piece of HSSC's health informatics infrastructure has launched—the clinical data warehouse (CDW). Part of the South Carolina Integrated Platform for Research (SCIPR), the CDW aggregates real-time clinical data from across HSSC's collaborative hospitals.

The CDW is a unique resource for health care researchers and providers in South Carolina. It will allow researchers to access large amounts of patient data (with personal identifiers removed) that will contribute to easier execution of cohort analysis and power studies. Meanwhile, it will allow providers to have instant access to a full range of clinical data about their patients, such as lab tests, medication lists, diagnoses, and discharge summaries.

The CDW will ultimately be connected to the statewide biorepository that is also part of the SCIPR. This will open up further research opportunities, as researchers will be able to access a database of tissue specimens categorized by their appropriate phenotypic and genotypic characteristics. These tissue specimens will be linked with the appropriate clinical data in the CDW.

Ultimately, the CDW and related infrastructure (including the biorepository and a specialized system to collect permissions from patients who allow their tissue to be used for research) will combine with advances in genomics research to support the greater personalization of medicine across South Carolina. Health care providers will be able to make care recommendations based on a person's phenotype and genotype, which will be available to the provider at the point of care.



HSSC completes funding for \$10 million CoEE in Health Facilities Design and Testing at Clemson University

In June, HSSC invested \$5 million in the Center of Economic Excellence in Health Facilities Design and Testing, which is led by Clemson University in partnership with MUSC and Spartanburg Regional Healthcare System. The investment matches \$5 million in South Carolina Education Lottery Funds allocated to the center through the CoEE program.

The \$10 million Health Facilities Design and Testing center conducts research, develops prototypes, and expands and disseminates knowledge on how health facility design affects health and health care delivery to improve architectural settings for patients and staff. Through interdisciplinary research, the center focuses on how the physical health care environment

affects four areas: health outcomes and patient safety; patient, family, and staff satisfaction; operational efficiency and effectiveness; and the ability to accommodate change.

Above is a new patient room design created by center faculty and students. A standard patient room—cluttered and harshly lit—has been replaced with a room in which critical medical equipment is out of sight but still accessible. Lighting and temperature are more easily controlled by the patient, and the footwall uses flatscreen technology to display virtual windows, television entertainment, medical charts, and video conferencing.



HSSC SPONSORS THIRD ANNUAL PATIENT SAFETY SYMPOSIUM



In March, HSSC sponsored the SC Hospital Association's annual Patient Safety Forum, which brings together health care professionals, hospital leaders, health policy makers, patient advocates, and others to share knowledge related to improving the safety and quality of patient care in South Carolina.

Top: Many medical professionals come together for this event to prevent and eliminate harm to patients due to medical errors and to honor those who are striving for excellent levels of care. **Bottom:** Change is good: South Carolina healthcare organizations honor four who have transformed healthcare in the Palmetto State



The 2010 Lewis Blackman Patient Safety Champion Awards were presented during the symposium. The awards were created in 2008 to recognize individuals who have demonstrated exemplary dedication and leadership in advancing the quality and safety of health care for patients across South Carolina.

One of the honorees was Robert Adams, MD, a neurologist at MUSC and the endowed chair in the HSSC-supported Stroke Center of Economic Excellence. Adams is working to reduce the life-changing effects of stroke by using telemedicine to connect MUSC stroke experts with South Carolina's small and rural hospitals. In just 18 months, Adams and his team recruited nine hospitals to the REACH Stroke Network; these hospitals now have around-the-clock access to MUSC stroke experts who help local ER physicians diagnose and treat stroke patients. At the time the award was given, more than 200 stroke consults had been completed and the use of tPA (tissue Plasminogen Activator) to treat ischemic strokes had quadrupled in REACH Stroke Network partners.



Robert Adams, MD (back row, second from right) is a CoEE endowed chair. Jan Vick, Founder and Executive Director of the South Carolina Voices for Patient Safety, is one of HSSC's Patient Advisory Committee Members (shown in white).

Simulation startup GOES GLOBAL with licensing deal



Nursing simulation

SimTunes, LLC, the educational technology company co-founded by John Schaefer, MD, of the Center for Clinical Effectiveness and Patient Safety and businessman Heyward Coleman, has sublicensed its intellectual property to Norway-based Laerdal Medical.

Through the agreement, SimTunes is granting Laerdal, a global manufacturer and marketer of medical simulation equipment and medical training products, the rights to the logic and software that will enable global distribution of SimTunes-created medical simulation educational material. In addition, the contract provides for the subleasing of educational material from SimTunes through a partnership between Laerdal and HealthStream, Inc., a leading provider of learning and research solutions for the health care industry.

"This arrangement provides a unique opportunity to rapidly make the educational material developed in South Carolina available worldwide and can result in a significant improvement in the manner in which health care professionals are trained. It's very exciting in terms of the potential impact on patient care and the state's economy," Schaefer said.

New simulation center opens

In other simulation news, the HSSC-supported statewide network of simulation centers expanded to seven in 2010 with the opening of a training facility at Trident Technical College.

To date, the seven centers that make up Health-Care Simulation South Carolina (other training sites include MUSC, Clemson University College of Nursing, Greenville Hospital System University Medical Center, Palmetto Health/USC School of Medicine, USC School of Nursing, and Greenville Technical College) have developed more than 100 courses, providing more than 3,000 training encounters.

The realistic, advanced-medical-mannequin-based training that these simulation centers provide to South Carolina's current and future health care professionals are improving the quality and safety of patient care throughout the state.



STAFF ADDITIONS

Inspiration. Innovation. Transformation.



Maynard Cain joined HSSC as a program manager and is responsible for managing informatics projects. Cain brings with him more than 20 years of IT experience. Before coming to HSSC, he was most recently the informatics project manager for Ahlstorm Nonwovens. He earned his BS in Computer Information Science from Mars Hill College and his MBA in Information Systems from Golden Gate University. Additionally, he is a certified project management professional.



Jean Craig joined HSSC as a data/database expert. She has extensive expertise in the area of data (collecting, storing, protecting, de-identifying, retrieving, reporting, analyzing, and modeling) along with soft skills (collaboration, communication) and technical skills (database managers/tools, statistical tools, connectivity tools, reporting tools). Jean has a PhD in Biostatistics from the Medical University of South Carolina. She brings years of experience from a variety of work experiences including warehouse design, implementation, tuning; application design, development; statistical analysis of data; mathematical modeling; and real-time data collection in the manufacturing, government, and health care arenas.



Nora Dunnigan joined HSSC as the administrative assistant for the CITIA-SC program (the South Carolina Regional Extension Center for health IT). She handles many of the core administrative duties for the program in the main office. She works with primary care providers across the state during their application process, assists with recruitment of new practices, generates progress reports, and maintains program records. Nora is a graduate of the University of Oklahoma and comes to HSSC with more than 10 years of experience with operations and management in the mutual fund/financial services business, and spent several years in the petroleum exploration business as a development geologist.



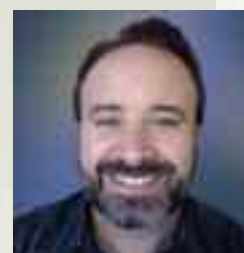
Gina Hambrick joined HSSC as a business manager and is responsible for managing, administering, and coordinating grant business activities to include fiscal management, personnel, and procurement. She is also responsible for budgetary and administrative activities of HSSC. She brings with her 15 years of experience with the University of South Carolina as an accountant managing the fiscal activities of research grants.



Rick Larsen is a clinical and informatics program director for HSSC and the South Carolina Clinical and Translational Research Institute (SCTR) at MUSC. He comes to us from Blue Shield of California where he was the director of application development and integration. He has an excellent track record directing software development, strategy, IT, operations, and employees.



Joelyn Manfredi joined HSSC as a program manager and is responsible for the HSSC eIRB (electronic Institutional Review Board) application and Palmetto Profiles (HSSC's research networking and expertise mining software tool). Manfredi is a certified project management professional and comes to HSSC after working most recently with the Leukemia & Lymphoma Society as a senior technical product manager. She earned her BS degree in business administration from SUNY Oswego and her MS in Information Systems from Pace University in New York City.



Daniel Rugg joined HSSC as a technical architect after many years of designing and implementing solutions as a technical consultant to the public and private sector, including the DOD, DOE, Fortune 1000, and venture capital-backed start-ups. At HSSC Daniel is responsible for the technical strategy for the software platforms and working with the technical team to create a first-class technology development group.



Elizabeth Shewfelt joined HSSC as a program coordinator with the South Carolina Clinical and Translational Research Institute. She has an MA in Clinical Psychology from Argosy University in Washington, DC, and plans to finish her PhD this spring. She comes to us from the Department of Defense in Arlington, VA, where she was an HR specialist.

2010

Looking Ahead

Inspiration.
Innovation.
Transformation.

HSSC's efforts to transform health care in South Carolina are taking place within a national health care landscape that is itself undergoing a mighty transformation.



Health care reform is never far from the minds of HSSC leadership and membership, and we are constantly looking for opportunities to serve as an asset and a resource for our member organizations as shifts in the way patients encounter and consume health care unfold.

Our health care reform task force (see p. 12) is but one part of this effort. All of HSSC's highest-priority initiatives, from infrastructure building to quality improvement, serve the ultimate goal of promoting innovation among health researchers and then disseminating those innovations to providers so they can deliver safer and higher-quality care to patients. Reform efforts create an environment that is especially conducive to allowing such new and better treatments, methods, and tools to gain widespread consideration and implementation.

The clinical trials network that HSSC is developing will provide services to member organizations that will improve efficiency in four areas: 1) research administration, 2) human subject compliance, 3) revenue enhancement and financial compliance, and 4) patient recruitment. By increasing the volume and efficiency of clinical trials in South Carolina, HSSC will dramatically enhance the research process for the entire state, encouraging the development of locally relevant, evidence-based recommendations for improvements to care quality and patient safety. The completion of HSSC's clinical trials and informatics infrastructure, the central feature of which is a statewide clinical data warehouse, will give members access to real-time clinical data from across HSSC's collaborative

hospitals. The warehouse will foster research and discovery by providing safe and easy access for researchers to data—such as labs, medication lists, diagnoses, and discharge summaries—that enables cohort analysis and power studies across the population of South Carolina.

The availability of this massive amount of data, gathered during routine clinical care, will allow the data analysis functions of our informatics infrastructure to give researchers a powerful method of generating clinical hypotheses and making evidence-based recommendations. These recommendations will improve care quality and patient safety at the public health or individual practice scale.

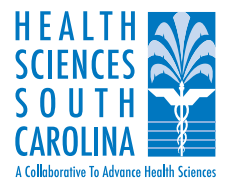
Data from clinical trials, the data warehouse, and other sources will be used to find the greatest opportunities to improve outcomes for patients using new knowledge and interventions. A special focus will be placed on improvements with regard to 1) the management of chronic diseases such as diabetes, cardiovascular disease, and stroke; 2) the elimination of harm associated with complex patient medication regimens, overuse of antibiotics, and adverse medication events; and 3) the delivery of safe and efficient care to an increasingly elderly population.

HSSC's simulation training program, HealthCare Simulation South Carolina, has rapidly become a leader in improving the quality of health care training and patient safety not only in South Carolina but nationally and around the world. Program leaders are now creating a research infrastructure (including

information technology, simulation equipment, and data collection) with the aim of validating the benefits of simulation in health care in order to widen its use even further.

By creating and nurturing a range of programs that foster multi-disciplinary clinical research, novel concepts of care delivery, and new models of education and training, HSSC is not only advancing South Carolina's capacity to protect and improve the health of its citizens, but also positioning South Carolina to be at the center of the national health care reform conversation. The Duke Endowment, which has provided essential support for our past activities, will continue to play a crucial role in our success.

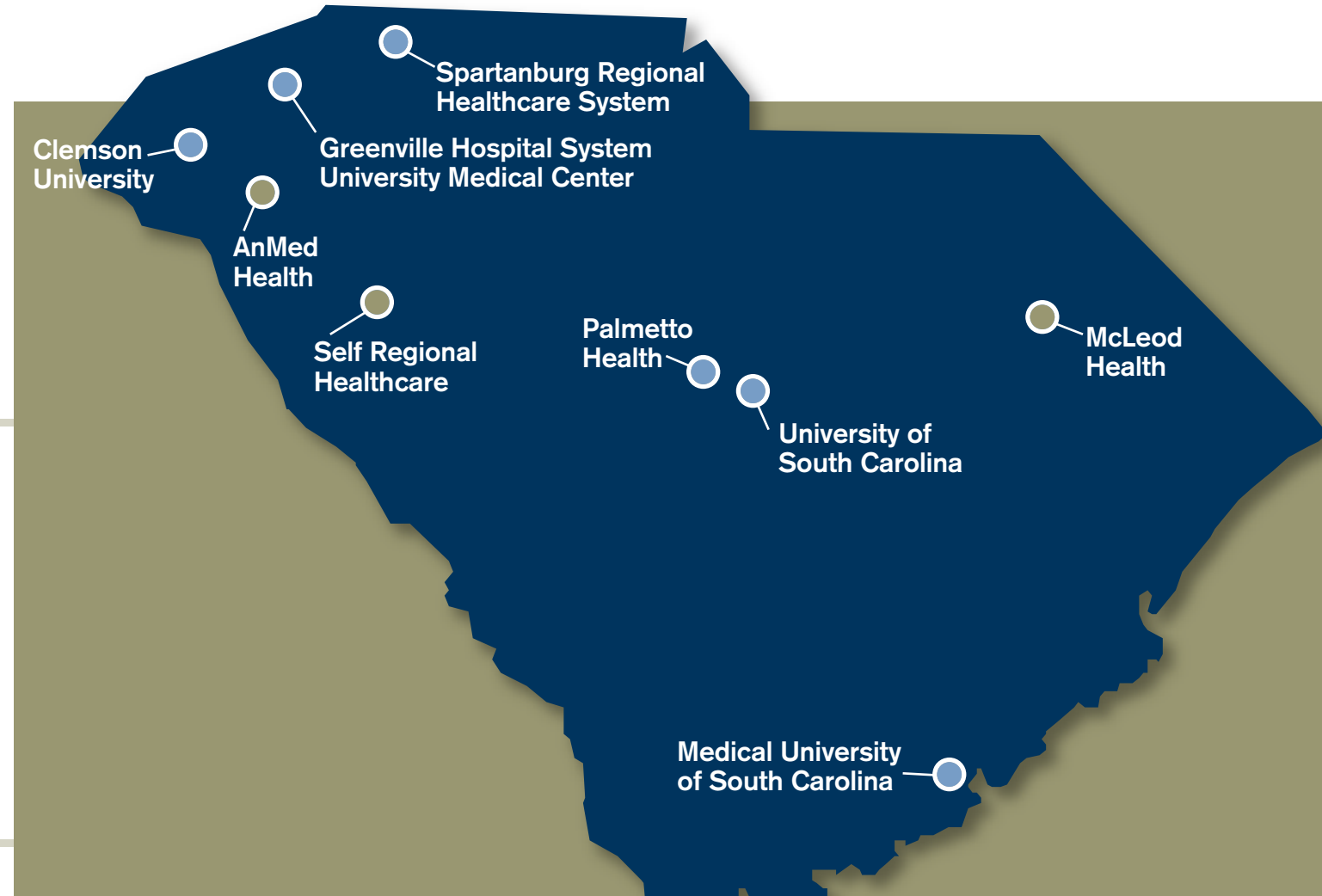
We at HSSC believe that we will continue to provide tremendous value and support to our members in the coming years. It's important to remember, however, that all our efforts are but a mechanism for achieving our ultimate goal of using innovation to improve the health and well-being of South Carolinians. No matter what external forces are at work, that will never change.



Supporting Organizations:



HSSC's **SIX** supporting organizations and **THREE** affiliates.



Affiliates:



The addition of AnMed Health, McLeod Health, and Self Regional Healthcare as affiliates in 2010 greatly expanded the geographic reach of HSSC and increased the number of people across the state who are served by an HSSC institution.