

FACILITIES AND OTHER RESOURCES

Laboratory: Not Applicable

Animal: Not Applicable

Computer: All offices have state-of-the-art IBM-compatible personal computers linked by Local Area Networks (LAN) and through the high-speed university-wide Internet connection. Software available for personnel use includes: Microsoft XP Professional; word processing (Word), spreadsheet applications (Excel), database management (Access), electronic mail (Outlook), data analysis (SPSS, SAS), slide making (Power Point), and communication with other computers (Explorer). There is an on-campus system support service coordinated the UAB Health Information Systems and the Clinical Cancer Center (CCC), which is responsible for all system support and backups. All files are password protected for privacy and reside on shared network directories with access restricted to only appropriate personnel. There are essentially unlimited data storage capabilities through this shared University-wide resource.

Office: As in many multi-disciplinary universities, UAB faculty members are located throughout the UAB campus. The main office infrastructures to be utilized for project support under this proposal are located in UAB's Faculty Office Tower and Medical Tower. Faculty Office Tower offices occupy ~2000 sq ft of central office space for immediate program staff and an additional 1000 sq ft of shared conference and other facilities. Office equipment includes a high speed copier (networked), 2 scanners, 2 Fax machines, teleconference equipment, and high output-color printer. Both areas are less than a 10 minute walk apart on the central UAB campus. Most outcomes and disparities group conferences are held either in the Department of Preventive Medicine area (housing COERE and MHRC) or in the Faculty Office Towers Housing the CERTs program. Despite the extreme geographic proximity, the two main conference rooms are also linked by Polycom Videoconferencing capacity allowing easy communication both within and outside of UAB.

The Medical Towers suite includes 9 fully networked offices and a fully networked conference room that seats 6. The suite currently houses 4 research and administrative support staff, as well as our predoctoral and postdoctoral T32 HSR fellows. Communications equipment and connections, internet connections, and computers for staff members (staff and students trainees) are supported through COERE's UWIRC funds or in the case of the federal trainees partially offset by the T32 training grant. DOPM provides intranet service, servers, software access, and IT support. This space and additional space dedicated to outcomes research for faculty with a primary or secondary appointment in the Division in total occupies 5,559 square feet of Medical Towers. Finally, the DOPM provides the COERE and MHRC with access to networked conference rooms, including web-based teleconferencing equipment, for meetings and faculty enrichment activities, adding another 9,384 square footage in hard infrastructure support.

Clinical and Other Resources: (See next pages)

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A. THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

1. Overview of The University of Alabama at Birmingham

The University of Alabama at Birmingham (UAB) is the only four-year public university in Birmingham, Alabama's largest metropolitan area. The University has grown from 15 blocks in 1969 to more than 80 blocks, with some 225 buildings providing over 12 million square feet of assignable space. UAB's budget of \$49.9 million in 1969 has multiplied to more than \$2.2 billion in 2010. The University of Alabama at Birmingham (UAB) is Alabama's largest employer, 24,410 faculty and staff at the university and in the health system, and provides 61,025 jobs within the university and the community. One out of every 33 jobs in Alabama is related to UAB. UAB's overall economic impact in the Birmingham metro area exceeds \$4.6 billion annually.

Additionally, externally funded grants and contracts continue to increase. This funding has doubled every decade since 1969, when UAB was established, and now stands at more than \$435 million. In funding from the National Institutes of Health, UAB ranks in the top 20 nationally and the School of Medicine ranks 20th, with seven departments among the top ten in the nation.

The 900-bed University Hospital is the centerpiece of the UAB Health System. Recent completion of a \$275 million dollar renovation project has given Alabamians access to a new 850,000-square-foot health care facility with an emergency room the size of a football field, high-tech surgical suites that can accommodate robot-assisted surgery, and a helipad with oversize elevators that can transport patients and life-support equipment. The new 11-story North Pavilion area of University Hospital expands bed capacity to 1,100 overall; it is situated within the central core of the current hospital complex – a system that spans 5 city blocks, occupies 13 major buildings, and covers 2.1 million square feet of space.. For outpatient care, The Kirklin Clinic opened in 1992. The Kirklin Clinic is a five-story 454,000 square foot building that consolidates the majority of the adult outpatient medical facilities at the UAB Medical Center. It provides examination and treatment rooms for more than 900 physicians in almost every specialty in adult medicine. In addition, over 1,500 patients are seen each day in the clinic's 257 exam rooms.

The UAB Research Foundation (UABRF) was formed in 1987 as a non-profit corporation with a mission to identify, assess, and market commercially viable technology developed at UAB. As such, it is the assignee of all intellectual property developed at UAB. The Foundation reviews invention disclosures submitted at UAB and initiates domestic and foreign patent filings when appropriate. It also negotiates, manages, and monitors research, option and licensing agreements with outside parties on behalf of the institution. In addition, the Foundation assists when technologies developed at UAB form the base of new start-up ventures.

In 1998, UAB also became formally affiliated with Southern Research Institute (SRI), an independent, not-for-profit center for scientific research. Founded in 1941, SRI has provided innovative leadership in scientific discovery, drug development, engineering, aerospace, materials, environmental and energy research, chemical and biological defense, and homeland security. SRI's public and private sector clients include the National Institutes of Health; the Departments of Defense, Justice, Homeland Security, and Energy; the Environmental Protection Agency; and NASA – as well as major private companies in the pharmaceutical, biotechnology, automotive, and energy sectors. Annually, SRI receives about \$30 million in NIH-funded grants and contracts.

The physical facilities for research at UAB include the state-of-the-art Shelby Interdisciplinary Biomedical Research Building which stands 12 stories tall with 340,000 gross square feet of space. When completed in 2006, it increased the amount of research space for the University by approximately 25 percent.

2. Multidisciplinary Research Centers

a. Center for Outcomes Effectiveness, Research and Education (COERE)

The UAB's Center for Outcomes, Effectiveness Research and Education (**K. Saag**, Director) was established

in 1998 and is a multidisciplinary University-wide Interdisciplinary Research Center. The COERE's mission is to maintain and continuously enhance a successful program of research on improving the quality and outcomes of health care in Alabama and across the nation. To accomplish this mission, the COERE 1) uses interdisciplinary teams to test innovations that promote evidence-based practice, reduce inequities in care for under-served and minority populations, and improve quality of life and functional outcomes for patients; 2) develops and tests innovative methods with application to important questions in the delivery of health care; 3) trains and mentors students, fellows and faculty in these methods; and 4) serves as a resource to UAB faculty, health care systems, related organizations, government, and philanthropy to further disseminate outcomes research knowledge and expertise.

The COERE offers integrated scientific expertise and experience in health services and outcomes and effectiveness research. This expertise includes: quality measurement and improvement, implementation research, patient-based outcomes assessment, pharmacoepidemiology, epidemiological/population-based health services research, retrospective claims data analysis, and economic evaluation and modeling (decision analytic modeling, cost-effectiveness and cost-benefit analysis).

This expertise is currently supported by a Methods Unit of faculty-level biostatisticians, epidemiologists and masters level program managers, statisticians and data managers and coordinated through focused Work Groups in methodological areas of expertise and interest (e.g., health informatics, economic evaluation and modeling, behavioral sciences, use of large data bases, pharmacoepidemiology) and certain disease focused areas of interest (e.g., cardiometabolic disorders, including diabetes; musculoskeletal disorders; HIV-AIDS, cardiovascular disease). Within and across these focus areas are the cross-cutting themes of health disparities, quality improvement, and patient safety. Through this intellectual infrastructure the COERE supports and maintains UAB faculty by providing: 1) assistance in the design and analysis of outcomes and effectiveness research studies; 2) assistance in the use of patient- and provider- level data for outcomes studies; 3) assistance in the development of research ideas and grant applications; and 6) mentoring of faculty and students in outcomes and effectiveness research.

Since being formalized as a University-Wide Interdisciplinary Research Center, COERE leadership has been instrumental in attracting over \$462M in extramural grant support for interdisciplinary research and training in health services and outcomes research at UAB. Through its work in statistical and methodological innovations in quality measurement and improvement, COERE has become a national resource to the health care industry. An example of this is our work in developing and disseminating the [Achievable Benchmarks of Care \(ABC™\)](#).

The [UAB Health Services and Comparative Effectiveness Research Training Program](#) is a multidisciplinary, combined predoctoral, postdoctoral, and junior faculty training program designed to build a health services research training infrastructure that will prepare independent investigators to pursue careers focused on translating research evidence into practice. A collaborative program between the COERE, Lister Hill Center (LHC), and the UAB Schools of Medicine, Public Health and Health Professions, the training program seeks to develop research skills in the following areas: changing physician practice behavior; improving quality of care; assessing the impact of the delivery system on the quality of care; relevant epidemiological, statistical, experimental, and quasi-experimental methodology; analysis of large data sets; economic evaluation; and the practical application of comparative effectiveness and patient centered outcomes research methodology.

The program prepares investigators to pursue careers focused on translating research into practice and policy (TRIPP) and contributing to the knowledge base that is required to do so. Predoctoral trainees obtain a PhD in Health Services Administration-Health Services Research or Medical Sociology. Postdoctoral trainees (MDs or other doctoral trained clinicians) obtain a Master of Science in Public Health (MSPH) degree in Outcomes Research or Pharmacoepidemiology/Comparative Effectiveness Research. The training program also has established an excellent track record in mentoring junior faculty to facilitate their training in clinical health

services and outcomes research. The cornerstone of the training program is the mentored research experience, which draws from the strengths of the UAB faculty who are national and international leaders in what the NIH Roadmap designates as Phase 2 Translational Research (T2). The mentored research experience is also enhanced through the program's access to a large pool of mentors with excellent track records in AHRQ and NIH funding, as well as through our innovative and highly successful "mentor-in-training" component.

In 2003, UAB was awarded a highly competitive 5-Year National Research Services Award Institutional Training Grant (T32) from AHRQ and has since been competitively renewed for another 5 years of funding (2008-2013). In July 2010, UAB was awarded two one-time training grants in comparative effectiveness research from AHRQ under the American Recovery and Reinvestment Act (ARRA) of 2009: 1) a 3-Year K12 grant supporting four scholars (ends June 2013), and 2) a 3-Year T32 supporting two cohorts of two fellows each. Both grants will end June 2013. **K. Saag** is the director and PI of all of these training grants.

b. Deep South Arthritis and Musculoskeletal (DSAM) CERTs

Established in July 2000 through a cooperative agreement with the Agency for Healthcare Research and Quality (AHRQ), the CERTs combines the substantial UAB clinical and health services research expertise with private sector collaborations to evaluate the effectiveness and safety of new musculoskeletal therapeutics and to guide changes in the practice community. Under the direction of **Kenneth G. Saag, MD, MSc**, and Associate Director **Jeffery R. Curtis, MD, MPH**, the Center conducts outcomes and effectiveness research encompassing the broad and rapidly emerging therapeutic areas in all musculoskeletal disorders. Awarded a \$4.1 million grant renewal in 2011 from AHRQ, the DSAM CERTs, one of only six national CERTs, is the only one focused on musculoskeletal disorders.

During its tenure, the DSAM CERTs has successfully identified, funded and conducted a large number of projects investigating and disseminating knowledge about safe and effective use of musculoskeletal therapeutics. Recent research includes predictors of mortality and morbidity among patients with elderly onset rheumatoid arthritis (RA), long-term safety and toxicity monitoring of non-steroidal anti-inflammatory drugs (NSAIDs), physician management and prevention of glucocorticoid-induced osteoporosis (GIOP), improving osteoporosis care for high risk home health patients in Alabama, standards of arthritis and osteoporosis prevention in Alabama, practice pattern variation, predictors of medication error in gout treatment, and recommendations for the use of biologics and non-biologics in the treatment of rheumatoid arthritis. Current research includes the defining serious adverse events from biologic therapies using large administrative databases, pragmatic clinical trials, adherence to therapies, and reducing disparities in risk assessment and communication. The DSM CERTs also focuses on the training and development of junior investigators including those from the HSOER T32 mentor pool and applicant pool.

With dissemination being a key component of the CERTs mission, the DSAM CERTs has developed active collaborations with various stakeholders including health care organization and payers (Kaiser Permanente Georgia, Alacare Home Health and Hospice) and advocacy groups (National Osteoporosis Foundation, Arthritis Foundation National Consumer Group, American Society of Health System Pharmacists) to assist in the dissemination of evidence based findings and tools.

c. Minority Health and Health Disparities Research Center (MHRC; **M. Fouad**, Director)

The NCMH sponsored UAB Minority Health and Health Disparities Research Center is a comprehensive educational, research, and community-outreach center focused on eliminating the health inequalities experienced by racial and ethnic minorities locally, regionally, and nationally. Under the theme of building trust, sharing power, and eliminating racial bias and discrimination, the center accomplishes its mission by fostering partnerships with academic schools and centers, historically black colleges and universities, state agencies, community organizations, and grassroots groups and serves as an infrastructure that supports interdisciplinary

research on minority health and health disparities. As a University-wide Interdisciplinary Research Center, the MHRC is supported by ten UAB schools and has 220 faculty members, 18% of which African American and 16% Hispanic. Such university-wide participation facilitates MHRC's involvement in interdisciplinary activities and ensures the accomplishment of its purpose to serve as an infrastructure that supports university-wide interdisciplinary research on health disparities.

The priorities of MHRC are encompassed within three programs: Research, Training/Career Development, and Community Outreach. The Research Program works with investigators to develop a conceptual framework for health disparities research. It identifies research priorities and multidisciplinary funding opportunities, provides investigators with scientific expertise and feedback during the research, and funds pilot research projects. The Training and Career Development Program provides training in health disparities research with emphasis on genetic admixture, cultural competency, bioethics, risk assessment, behavioral, and community-based participatory research principles. The Community Outreach Program links UAB schools, centers, and investigators with the community to facilitate the dissemination of evidence-based interventions and knowledge in a culturally appropriate fashion.

The center's three programs are supported by three cores: Genetics, Bioethics, and Recruitment and Retention. The Genetics Core supports the Research Program and the Training and Career Development Program by providing to researchers seminars and workshops on using genetic methodology to understand and characterize health disparities along with statistical analysis and consultation in genetic admixtures. The Bioethics Core supports the Training Program by conducting ongoing education for researchers on ethical issues and cultural sensitivity and by developing guidelines for addressing ethical and social issues in genetic research. With this focus, the Bioethics Core seeks to determine barriers to working with minority communities in conducting health disparities research. The Recruitment and Retention Core supports the Research Program by providing strategies for recruitment and retention of minority participants in research studies through FACES, the Facility for Access to Clinical Enrollment Services. Decades of work building trust within the community provides access to grassroots organizations, service groups, health-care professionals, and local businesses. The three cores are enhanced by the ARRA-funded Center of Excellence in Comparative Effectiveness Research for Eliminating Disparities (CERED) (**Fouad, K. Saag** co-PIs). Specifically, CERED aims to conduct comparative effectiveness research (CER) within health disparities populations, establish effective dissemination strategies to raise the awareness of CER results in health disparities populations, promote linkages to patient data registries and promote participation of health disparities populations in CER studies.

One of the MHRC's greatest strengths is its community involvement and strong partnerships locally, statewide, and throughout the Southeast. Over the years, the MHRC has emerged as the link connecting UAB with the community on regional, state, and local levels. On the regional level, the MHRC serves as the lead Center of Excellence in the Elimination of Disparities (CEED) of six Mid-South states through a CDC center grant. On the state level, the MHRC is an active member of the Black Belt Action Commission Health Committee. Other community partnerships include: 1) The faith-based Healthy Congregations Healthy Communities coalition, which includes six churches with a mission to reduce diabetes and colorectal cancer; 2) REACH 2010/REACH US coalition, that includes 19 organizations representing faith-based, grassroots, and cancer-support groups, health-care providers, private foundations, and state agencies; 3) a partnership with the City of Birmingham that includes the Mayor's Healthy Birmingham Initiative and the MHRC's Building Healthy Communities program; and 4) a partnership with St. Vincent's and Cooper Green Mercy hospitals, which has developed and implemented culturally relevant training for lay individuals to disseminate information and facilitate health-care access in Hispanic communities.

The MHRC Building Healthy Communities initiative fosters healthy communities from within by establishing coalitions of neighborhood stakeholders, community leaders, and grassroots groups in order to develop a community-driven action plan. The initiative's objectives are to: 1) devise a strategy that is tailored to the needs

of low-income populations by partnering with community and political leaders, churches, schools, and businesses; 2) identify key leaders and form a Healthy Communities Coalition in each neighborhood; 3) help the established coalition identify the health needs and priorities of their community; 4) based on identified needs, develop a community-driven action plan; 5) organize disease-prevention and wellness events; and 6) evaluate the outcome. As part of Building Healthy Communities, the MHRC has launched Healthy Happy Kids: Nutrition and Physical Activity, a childhood obesity prevention program, and WALK! Feel Alive, a community-based program for physical exercise accessible to low-income populations, which partnered with community leaders and stakeholders to create coalitions, established neighborhood walking teams and trained team captains, created a website (www.walkfeelalive.com) for participants to report their steps self-tracked with a pedometer, and provided an incentive program whereby participants receive awards for accumulated steps.

The centerpiece of the Training and Development program is the Health Disparities Research Training Program (HDRTP). The HDRTP enrichment activities, research training and career development opportunities for investigators and students who are interested in minority health and health disparities research. The MHRC Training Program works to reduce disparities through the training and education of health care professionals and students with the purpose of creating the student pipeline (high school, undergraduate, graduate, post-doctoral, junior faculty, etc.), in conjunction with partner academic institutions. As part of the Training Program, we assign each scholar to a faculty mentor. In this way we create a support system for the students. The trainees, many of whom are minorities, from these centers and programs are brought together under the umbrella of one coordinated health disparities enrichment and training program implemented under one management, curriculum, and evaluation process with the ultimate goal to eliminate health disparities. Some of the specific initiatives are to: 1) identify and provide technical support to minority faculty and researchers at UAB and partnering institutions; 2) Organize career development training seminars to build cultural competency; 3) Organize Grant and Manuscript Writing Workshops; 4) Identify and help recruit undergraduate minority students in Alabama Historically Black Colleges and Universities (HBCU's); 5) Promote training opportunities at UAB among minority students from partnering HBCU's, as well as UAB.

d. Center for Clinical and Translational Science (CCTS; R. Kimberly, Director)

The Center for Clinical and Translational Science (CCTS) is a research center of the University of Alabama at Birmingham (UAB). One of three autonomous institutions within The University of Alabama System, UAB is the only four-year, public university in the state's largest metropolitan area. The vision of the Center for Clinical and Translational Science (CCTS) is to transform the institutional environment by building productive and efficient interdisciplinary research teams through educational ingenuity, regulatory reorganization, resource coordination, and methodological innovation. Its mission is to develop a transformative infrastructure that spans the spectrum from preclinical research to bench-to-bedside translation to community implementation.

The CCTS partners with other University-Wide Interdisciplinary Research Centers (UWIRCs) to support the CCTS Pilot Program. The goal of this translational research intramural grant program is to develop investigator-initiated pilot projects with a focus on creating new interdisciplinary clinical and translational research projects in order to grow mature research programs in these areas. A two-step proposal process includes a pre-application and a requested full proposal. Requests for proposals are announced each fall with new awards made early the following year. CCTS leadership anticipates awarding up to six projects per year. One project, in collaboration with the UAB Minority Health & Health Disparities Research Center, provides funding for a minority investigator working on translational research projects for underrepresented minority populations. In 2011, eight \$60,000 one-year awards were made, from a total of 32 applications. Seven different UWIRCs participated in these awards.

The KL2 Mentored Career Development Program (**K. Saag**, Leader) is for junior faculty in a clinical or related discipline. Scholars, selected through a competitive application process, receive KL2 Clinical and Translational Science career development support for up to five years with protected time for both formal training and hands-on research. Scholars enroll in an educational program, usually the MSPH in Clinical and Translational

Science, which include the CTS core curriculum. In parallel, they enter a research apprenticeship with a primary mentor who has an excellent training record and commits to extended close interaction with the Scholar. The overall goal of this training program is to impart knowledge, experience, and perspective to a network of junior scientists who will emerge as independent investigators. Training will culminate in lead author manuscripts and an extramurally-funded research grant submission (e.g., R01).

To support the KL2 Scholars and all other UAB individual and institutional career development awardees, a K-Club was established as a means of addressing the needs of career development awardees. Held quarterly, K-Club meetings provide beneficial research information on publications, funding, and career planning in an informal setting for social interactions between K Scholars from across UAB. These meetings also strengthen and build collaborative relationships throughout the UAB community. It is also a forum for internal and external speakers to share their experiences and offer advice on career building and decision making for the next generation of comparative effectiveness academicians.

The Design and Biostatistics Program provides clinical and translational investigators with access to experienced methodologists. The Program supports translational research at UAB by providing investigators with methodological expertise in epidemiology, biostatistics, outcomes and effectiveness research, and data management. They are available to collaborate with clinical and translational researchers needing assistance from the CCTS. The focus of this support is at the “launch” of translational research, during the critical design and initial implementation phases of the project, with the expectation that resources for the continued involvement of methodologists will be provided by the projects themselves as they transition to funding and execution.

The Nascent Projects Panel provides readily available expertise in a variety of areas of relevance (e.g. biostatistics, ethics, health disparities, outcomes, regulatory, grant writing, etc.) for investigators planning and/or developing clinical and translational research projects. The Panel consists of experienced investigators from across campus and provides input to all CCTS trainees and other “developing” investigators as its capacity allows. Required participants include CCTS Pilot Program awardees and CCTS KL2 Scholars. The Panel is also available to other investigators across campus, such as non-funded finalists from the required programs and junior faculty applying for or initiating K-type grant applications and other career development awards. Each participating investigator gives a brief presentation focusing on the overarching goal and aims of the research project. Panel members provide immediate verbal feedback with synthesized written comments provided later. As needed, the Panel identifies mentors and collaborators for investigators to provide necessary input on the project and career development.

e. Lister Hill Center for Health Policy (LHC; M. Morrissey, Director)

Federally endowed in 1987, the Lister Hill Center has a university-wide mission to facilitate the conduct of health policy research, to disseminate the findings of trans-disciplinary research beyond the usual channels of academic publication, and to sponsor the Lister Hill Policy Fellows Program. The Center draws on scholars from throughout the university to address issues of health care access, financing, organization, delivery, and outcomes, with particular emphasis on health promotion and disease prevention strategies, such as those relevant to the proposed project. The Center publishes UAB Health Policy Research, a précis of policy research for regional and national policy makers. It sponsors an intramural grants program in health policy/health services research. The research of the LHC Scholars are organized into five areas: 1) health care markets and managed care; 2) maternal and child health; 3) strategic management of health care organizations; 4) outcomes research; and 5) aging policy. Effective intervention strategies may require an evaluation of their impact on health care policy and environmental justice issues. The Lister Hill Center provides guidance in understanding and projecting the impact of such changes on health care policy and identifying the most efficient methods for implementing such strategies. Currently, the Center has over 50 appointed faculty representing 20 departments and 7 schools at UAB.

f. Center for Aids Research (CFAR; **M. Saag**, Director)

The UAB Center for AIDS Research (CFAR) is one of the seven original Centers established by NIAID in 1988. It has benefited over the past 20+ years from institutional leadership that has had the vision to support AIDS research to an extraordinary level, based on the deeply-held belief that UAB investigators should play a leading role in combating this global plague. With seminal research discoveries from HIV-1 viral dynamics to viral diversity to the zoonotic origins of HIV-1, and with translational therapeutics research leading to first-in-human trials, and FDA approval of no fewer than 7 antiretroviral drugs, the UAB CFAR has played an instrumental role in leading HIV/AIDS research efforts on a global scale since its inception. The CFAR has seen its total research funding grow from \$2.9 million dollars in 1988 to over \$90 million currently. This included an NIH ARRA-funded Infectious Diseases T32 with a CER focus. Postdoctoral fellows supported by this grant participated in the HSOER Training Program directed by **K. Saag** and COERE.

Membership of CFAR is comprised of its Executive Committee and 200 Center investigators from 33 different Departments (and 10 divisions within the Department of Medicine) and nine schools within the University. Investigators from the UAB-affiliated Southern Research Institute (SRI), which has a long history of research into anti-viral drug development, are also appointed as CFAR members. The Center investigators participate in the Center's interdisciplinary research activities through Interdisciplinary Research Programs and workgroups.

A key component of CFAR is the UAB 1917 Clinic, which provides comprehensive and compassionate health care for people with HIV infection. This is accomplished through specialty clinics for HIV patients with needs in dermatology, dental, oncology, neurology, addiction recovery, and palliative care and social service support. By the time the 1917 Clinic had formed in 1988, a sufficient number of researchers and physicians were already in place. The Clinic provided a specialized environment in which to treat patients and study HIV. The blood and tissue samples collected over the years have been used to learn how HIV causes disease, and have contributed to the development of increasingly more effective treatments. The clinic also facilitates interactions between laboratory scientists by providing clinical specimens from well-characterized patients; and conducting clinical trials of new approaches to treatment. By participating in a clinical trial a patient has the chance to receive an experimental drug or treatment before it is widely available, the opportunity to receive regular medical attention and other services at little or no cost, and the satisfaction of contributing to scientific knowledge about the disease and improving existing treatments

Patients seen at the clinic provide the foundation for the UAB 1917 Clinic Cohort, a prospective cohort study established in 1992. The Cohort provides unique insights into a region bearing a disproportionate burden of the domestic HIV epidemic. The multidisciplinary investigative team also partners with national and international investigators playing a pivotal role in large scale, multi-site collaborative cohort studies. The success of the 1917 Clinic Cohort over the years is directly attributable to the talent and enthusiasm of the Cohort Team that includes individuals from a diverse array of backgrounds and career stages who work together on a daily basis to collectively advance the scientific agenda. The UAB CFAR is also a member of the the CFAR Network of Integrated Clinical Systems (CNICS) project, the first electronic medical records-based resource network that integrates clinical data from the large and diverse population of HIV-infected persons in the modern HAART era who are receiving care at one of the US-funded Center for AIDS Research (CFAR) sites. Both the 1917 Cohort and CNICS are available to trainees interested in using them during their training and we have developed a short term rotation using CNICS data.

g. Center for Aging (CFA; **R. Allman**, Director)

The UAB Center for Aging is an interdisciplinary community that promotes the health and well-being of older persons by conducting and promoting age-related research, training students and faculty to conduct research, disseminating their knowledge, and supporting community outreach and clinical programs. This University-Wide Center, established in 1976, encourages and coordinates the activities of the multiple disciplines represented by the many UAB schools to fulfill its mission. More than 175 faculty members representing all 12 UAB schools have appointments in the Center for Aging. Core resources available to Center faculty include a

Data Management Core, a Protein Synthesis Core, Driving Simulator, data from the UAB Study of Aging, grant and contract administration, funding information dissemination, biostatistical consultation, data entry, computer programming services, and a resource room of journals in aging, textbooks, and other materials. Collaborative research is conducted in the areas of immobility, urinary incontinence, Alzheimer's disease, atherosclerosis, musculoskeletal disease, and age-related cancer. Center for Aging faculty have extramural support for research in these and other areas totaling \$60 million.

Investigators interested in age-related research can utilize CFA provided enrichment and training activities including the Deep South Resource Center for Minority Aging Research (RCMAR). The Deep South RCMAR serves as research-based and mentoring investment in the process of closing the health disparities gap between African American and non-minority older adults. Focus areas for the Deep South RCMAR include health problems that are particularly prevalent among older African Americans, with special attention to issues related to rural elders; intervention research addressing exercise, diet, or preventive health strategies; and studies addressing socio-economic, discrimination, trust, and bioethical issues impacting measures of both physical and mental health. The Deep South RCMAR is composed of three interacting and collaborative cores (administration, investigator development, and community liaison) created by and built upon the unique strengths of four partnering institutions (Morehouse School of Medicine, Tuskegee University, University of Alabama, and University of Alabama at Birmingham). The cores provide an infrastructure to provide training and mentoring programs, fund three pilot projects per year, and nurture community relations needed to meet RCMAR objectives. The Deep South RCMAR is not only a regional, but also a national resource, for expertise related to the reducing health disparities between older African Americans and Whites, mentoring investigators committed to research in health disparities and aging; and working with communities to achieve common goals and enhance the recruitment and retention of older African Americans in research studies.

h. Nutrition Obesity Research Center (NORC; **D. Allison**, Director)

The Nutrition Obesity Research Center (NORC) is an NIH-funded, university-wide research center established to foster a multidisciplinary approach to basic, clinical, and translational research with an emphasis on understanding the metabolic factors, environmental influences, and associated genetic traits underlying nutrition and obesity-related health problems. The NORC comprises 110 investigators from 30 academic units, with many extramural grants for nutrition/obesity research. The NORC is comprised of four research core facilities (Metabolism, Genomics, Biostatistics, and Animal Models). Of relevance to the HSOER T32 trainees, the Biostatistics Core supports study design and data analysis, and methodologic research in optimal design of trials for obesity. In the area of continued training, the NORC coordinates the NORC Seminar Series and an annual symposium. The seminar series' objectives are to help investigators to apply nutrition research findings in patient care, discriminate nutrition ideas with good scientific evidence from those that have little evidence, communicate findings related to nutrition to their patients and stimulate inter-disciplinary scientific discussions regarding nutrition and obesity. Currently the NORC has two T32 programs, a predoctoral fellowship and a postdoctoral fellowship. T32 Co-Director, Monika Safford and other HSOER mentors are also mentors for these T32 programs. These programs provide the potential for joint recruitment efforts and additional synergy between training and educational activities

3. Schools

a. School of Medicine (SOM)

The University of Alabama School of Medicine (UASOM) serves as an educational center, predominantly for Alabama. Its faculty represents a variety of disciplines with diverse educational and research backgrounds. The School has an earned tradition of excellence in research and clinical care and is recognized as a leader in many fields. Total research funding exceeds \$400 million annually; some \$217 million in NIH funds can be attributed to the School of Medicine alone. FY 2010, UASOM ranked 20th in the nation in research awards received from the NIH.

The UASOM is one of the leading public medical schools in the Southeast. For nearly 50 years, it has been responsible for educating and training medical students, for providing knowledge in basic and clinical sciences, and for understanding and appreciating the socioeconomic factors involved in providing both primary and specialized medical care. In its predoctoral medical education program, the first two basic science years are taught on the main campus at UAB; the last two clinical years are divided among the main campus and the two branch campuses in Huntsville and Tuscaloosa. The three units are accredited as the UASOM by the Liaison Committee on Medical Education, which approves all programs in medical education in the United States and Canada. The UASOM entering medical class of 2010 matriculated 176 students. It is comprised of 43% females and 57% males. Six percent of the entering class is African American.

b. School of Public Health (SOPH)

One of 33 accredited Schools of Public Health in the U.S., the UAB SOPH is comprised of approximately 75 faculty members in Departments of Biostatistics, Environmental Health Sciences, Epidemiology, Health Behavior, Health Care Organization and Policy, and additional foci in International Health and Maternal and Child Health. The School of Public Health recently ranked 16th among programs offering public health master's/doctoral degrees. In addition, the UAB School of Public Health was recently ranked 12th in NIH funding. Currently it has 170 active research projects, funded for over \$36 million, and 1140 pending applications requesting over \$116 million. Twenty-two programs of study are offered and the student body of 300 includes 200 from Alabama, more than 28 from other states, and 8 from other countries. The School of Public Health has an increasingly broad and skilled faculty that provides leadership and support for several key national and international health initiatives while undertaking an array of important research projects. These projects focus on cancer and environmental epidemiology, industrial hygiene, health care organization, health services research, health behavior, biostatistical and epidemiological methods for chronic and infectious diseases, HIV infection, vitamin depletion, toxicology, and a variety of international health issues in numerous countries. The School supports six centers that play key roles in its mission to prevent and control disease: the Center for Community Health Resource Development, the Deep South Center for Occupational Health and Safety, and John J. Sparkman Center for International Public Health Education, the Center for Health Promotion, the Center for Health Risk Assessment and Disease Prevention, and the Lister Hill Center for Health Policy.

c. School of Health Professions (SHP)

Created in 1969, the UAB School of Health Professions has 21 academic programs at the baccalaureate, master's, and doctoral degree levels within six departments: Critical Care, Diagnostic Care, Health Services Administration, Nutrition Sciences, Occupational Therapy, and Physical Therapy. It has 94 full-time faculty and nearly 1,700 students. It educates health professionals to enhance and improve health care services and the systems through which these services are administered. In keeping with the mission of UAB, the resources of the programs of SHRP are dedicated to excellence in teaching, research, scholarly activity, and service to the institution, community, and the professions. In every year since 1979, the School has ranked either first or second in total support provided by the NIH to Allied Health Schools. It is one of the largest health profession schools in terms of both students and number of degree programs offered. The most recent U.S. News and World Report ranking placed the School's health services administration program 5th and its occupational therapy program 17th. The School also enjoys a national and international reputation in research, diagnostic and rehabilitative care, and clinical and didactic education.

d. School of Nursing (SON)

The School of Nursing offers curricula leading to a Bachelor of Science in Nursing (BSN), Master of Science in Nursing (MSN), and PhD in Nursing. The School of Nursing's master's degree program was recently ranked 21st in the nation. The School of Nursing supports a scholarship quarter each year to enable faculty to focus more fully on achieving research and scholarship goals. Since the plan was established, faculty involvement in research has more than doubled. Intramural research funding is available on a competitive basis to conduct small-scale studies, and thereafter faculty members are expected to apply for extramural funding to conduct

larger studies. A strategic plan for the School includes goals that reflect the commitment of faculty and staff in strengthening their research programs. Opportunities for research development for doctoral students are provided through the support of UAB fellowships awarded on a competitive basis. The Dean's Research Award Program is available to assist faculty to meet their research goals. In addition, the School has been designated as a World Health Organization (WHO) Collaborating Center for International Nursing, one of 12 in the U.S. and 36 in the world. The WHO designation indicates that the research and education programs in the School of Nursing are recognized nationally and internationally, and that UAB has superior scientific and technical leadership in nursing. As a WHO Collaborating Center, the School collaborates with other countries to develop graduate programs and assists in educating nurses in the conduct and application of research findings. It also engages in programs that allow students and faculty to participate in international nursing activities and global issues. The School's collaborative relationships with Japan, Jordan, Saudi Arabia, Taiwan, Australia, Colombia, Brazil, Chile, Guatemala, Bangladesh, and Thailand have included visiting scholars, visiting professors, student exchange, and an international research program. For the current application, the SON is represented by a Content Leader (P. Patrician, PhD), mentors, and potential T32 trainees.

e. College of Arts and Sciences (CAS)

The UAB College of Arts and Sciences was founded in 2009 with the integration of the schools of Arts and Humanities, Social and Behavioral Sciences, Natural Science and Mathematics, and Education. The college includes 20 academic departments offering 58 baccalaureate majors and 36 programs leading to a masters or doctoral degree. The college includes more than 350 full time faculty members, approximately 59% percent of whom are tenured. The College's faculty work closely with COERE, MHRC, and numerous other interdisciplinary research centers on campus as investigators and specialty consultants. The College is home to the Department of Sociology, whose students and graduates from the Medical Sociology Program, have actively participated in the HSOER Training Program as Predoctoral and Postdoctoral Fellows as well as Mentors for the program's trainees. For the current application, the College is represented by mentors and potential T32 trainees.

4. Departments, Divisions, and Units

a. Department of Medicine (DOM), SOM

The Department of Medicine at UAB strives for excellence in its three-fold mission of teaching, research and patient care. The Department is committed to providing outstanding clinical service to its patients and to the community; exceptional medical education for medical students, residents and other health professionals; and innovative research to expand the frontiers of biomedical knowledge and clinical practice. . This emphasis on research is evidenced by the Department's active grants totaling over \$124 million.

The Department's 373 (including affiliated) faculty are distributed among fifteen divisions: Cardiovascular Disease; Clinical Immunology and Rheumatology; Clinical Nutrition and Dietetics; Developmental and Clinical Immunology; Endocrinology, Diabetes and Metabolism; Gastroenterology and Hepatology; General Internal Medicine; Genetic and Translational Medicine; Gerontology and Geriatric Medicine; Hematology and Oncology; Human Gene Therapy; Infectious Diseases; Nephrology; Preventive Medicine; and Pulmonary, Allergy and Critical Care Medicine. All of these academic units have active, extramurally-funded research programs.

The Department is the academic hub of a number of major centers of research including several of national prominence. The Deep South Musculoskeletal (DSM) CERTs, the COERE, the MHRC, CFA, CFAR, the UAB Comprehensive Cancer Center, the Arthritis and Musculoskeletal Center, the Pittman General Clinical Research Center, the Cardiovascular Research and Training Center, the Center for Nuclear Imaging Research, the Geriatric Education Center, the Cystic Fibrosis Research Center, the Lung Health Center, the Liver Center, the Nephrology Research and Training Center, and the UAB Sexually Transmitted Diseases Center are all directed by Department of Medicine faculty. According to the latest graduate school rankings by U.S. News & World Report, released March 15, 2011, the School of Medicine is ranked 30th in the research

category. Three medical fields within the SOM are ranked in the top 20 nationally by the magazine: AIDS, 6th; primary care, 10th; internal medicine, 20th; and geriatrics, 12th. The Department's research infrastructure includes the Research Development Group, which sponsors the annual Trainee Research Symposium open to all department trainees, and the junior faculty mentoring program. For the current application DOM will provide office infrastructure, members to the Internal Advisory Panel, as well as mentors and potential T32 trainees.

b. Division of Preventive Medicine, DOM, SOM

The Division of Preventive Medicine (**Fouad**, Director) focuses on research and clinical activities that reduce or prevent chronic disease. This division has 24 physician faculty members and 250 staff. Within the Division are two distinct units, Preventive Medicine and the Behavioral Medicine Unit. The Clinical Preventive Medicine Unit features a broad range of medical assessments and research interest with particular emphasis on women's health and cardiovascular diseases. The behavioral medicine unit contains a faculty comprised of behavioral scientists with expertise in designing, implementing and evaluating research that addresses the role of behavior in health and health behavior changes to promote health. The Division, including the Clinical Unit and the Behavioral Medicine Unit, has broad and varied research specialty areas, including risk reduction and prevention interventions, health care seeking among under-served populations, medical and behavioral epidemiology, and randomized clinical trials. There are currently over 89 active projects with award amounts totaling more than \$144 million in funding from the National Institutes of Health (NIH), Centers for Disease Control and Prevention (CDC), and the Veterans Administration (VA). DOPM houses the COERE and MHRC administrative offices.

c. Division of Clinical Immunology and Rheumatology, DOM, SOM

One of sixteen divisions in the UAB Department of Medicine, the Division of Clinical Immunology and Rheumatology is internationally recognized and dedicated to pursuing new knowledge and translating research findings into more effective diagnosis and treatment of patients with rheumatic diseases. The 173 faculty and staff members of the Division have over 100 active extramural grants and contracts, with a funding total of approximately \$34 million annually. As one of the largest academic rheumatology units in the nation, the Division's clinical program registers over 20,000 patient encounters annually, evaluating and treating patients with various forms of connective tissue disease including rheumatoid arthritis, systemic lupus erythematosus, scleroderma, dermatomyositis, polymyositis, vasculitis (Wegener's granulomatosis, etc.), fibromyalgia, and osteoporosis. In addition, the Division has a substantial, peer-reviewed, externally funded research program in fundamental research and its translation into clinical intervention.

The Division of Clinical Immunology and Rheumatology maintains an ACGME-accredited Fellowship Program in Rheumatic Diseases which upon successful completion allows eligibility for the certification examination in rheumatology provided by the American Board of Internal Medicine. In addition, a wide variety of opportunities are also available for fellows interested in fundamental laboratory and translational research.

In each of the past 18 years, according to the U.S. News and World Report, UAB's Division of Clinical Immunology and Rheumatology has been ranked as one of the University's most highly regarded clinical program (11th nationally, 2010). The entire UAB Rheumatology clinical faculty was recognized in the latest edition of "Top Doctors in the USA." Dr. Louis W. Heck has been honored with the 2004 Arthritis Foundation Distinguished Rheumatologist Award, is the 2005 recipient of the C. Glenn Cobbs, MD/Edwin A. Rutsky, MD, Award for Clinical Excellence and was recently named Master of the American College of Rheumatology. Division faculty have also been recognized with the Max Cooper Award for Research Excellence [Mountz (2003), Carter (2004), **K. Saag** (2005), J. Curtis (2010)]. The Division has also been distinguished as one of the Federation of Clinical Immunological Societies' Centers for Excellence. The NIH has recognized UAB and the Division with a five-year \$3.6 million award to establish an Autoimmunity Center for Excellence (ACE) – one of only nine such centers nationwide.

d. Division of Infectious Diseases, DOM, SOM

The Division of Infectious Diseases is a large division involved in various activities relating to the traditional academic missions of education, patient care and research. The Division consists of 36 full-time and three emeritus faculty, nine fellows and 130 support staff. Over the past decade, the Division has been an annual recipient of one of the three DOM Best Teaching Division awards given yearly by the Medicine House staff. In addition, over the same period, several ID faculty have been named "Outstanding Teacher" in the DOM and/or SOM. For 2008, the Division's federal research awards and industry grants (direct cost) totaled over \$21 million. The Division also has two NIH sponsored T32 grant. Research interests of the Division relevant for Project 4 include 1) pathogenesis of viral infections, especially human papillomaviruses, herpes simplex, varicella zoster and retroviruses; 2) antiviral therapy (HSV, VZV and CMV); and 3) host defenses and infectious diseases in immunocompromised patients.

e. Division of Gerontology, Geriatrics, and Palliative Care, DOM, SOM

The Division of Gerontology, Geriatrics, and Palliative Care at the University of Alabama at Birmingham (**R. Allman**, Director) serves older adults and patients with advanced or life-threatening illness by providing leadership and core faculty for innovative models of clinical care; teaching and instructing students, fellows, and residents; and conducting research that generates new knowledge contributing to the advancement of science and the quality of life. Faculty and staff are dedicated to carrying out these activities in a caring manner that always respects the dignity of those we serve.

The Division includes forty-six faculty members including twenty-eight physicians, one nurse, and seventeen basic and social-behavioral scientists who work together to achieve the common goal of being one of the best such programs in the United States. The Division consists of four sections (Geriatric Medicine, Palliative and Supportive Care, Social and Behavioral Science, and Basic Science) and works closely with other UAB programs in aging. Division faculty provide leadership for a number of interdisciplinary centers and programs at UAB including the Center for Aging, Center for Palliative Care, Geriatric Education Center, Southeast Center of Excellence in Geriatric Medicine, Deep South Resource Center for Minority Aging Research, and the Gerontology Education Program. Many Division faculty members are active in research activities that focus on mobility, urinary and fecal incontinence, Alzheimer's disease and related memory problems, nutrition, geriatric heart failure, end-of-life care, advanced illness management, functional outcomes of geriatric health care, and quality improvement.

The Division provides training in geriatric medicine and palliative care for medical students and medical residents. Division faculty members also provide services and medical education on the General Medicine Wards of the Birmingham Veterans Affairs Medical Center (BVAMC), the University Hospital, and in the VA out patient clinic. The Division offers fellowship training in Geriatric Medicine that is designed to prepare the internists and family medicine physicians for an academic career in Geriatric Medicine and to provide leadership for health care programs that serve the needs of older adults. A fellowship program in Palliative Care is also offered. Also, the NIA-funded The Advanced Illness and Multimorbidity (AIM) Research Program of the UAB Center for Palliative Care trains investigators to improve quality of life and patient outcomes for those experiencing coexisting chronic conditions, fosters interdisciplinary AIM research and builds a network of collaborative AIM researchers and healthcare professionals.

f. Division of Continuing Medical Education (CME), SOM

Directed by **Monika Safford, MD**, the mission of the School of Medicine's Division of Continuing Medical Education (CME) is to facilitate the diffusion and adoption of new medical knowledge and skills into medical practice and to measure the effectiveness of various educational interventions in improving physician performance and patient health outcomes. The Division sponsors a range of educational activities, including Internet online courses, grand rounds, live symposia, case-based programming, audio conferences and teleconferences and enduring materials including monographs, audio-tapes and Interactive DVDs.

The measurement of the effectiveness of various educational interventions in changing provider behavior has been focused in several areas. First, case-based surveys are developed using scenarios based on elements of clinical practice guidelines; the congruence of physician practice patterns and clinical practice guidelines is measured by answers to case scenarios. These have been developed and used nationally and regionally in arthritis, stroke, asthma, hypertension, diabetes, gastro-esophageal reflux disease and HIV-infection. Second, prospective randomized controlled trials are being conducted to determine the effectiveness of educational interventions in improving physician performance and patient health outcomes in the areas of hypercholesterolemia, depression, ischemic stroke, and pediatric asthma. In addition, the Division tests the effectiveness of innovative interventions in changing provider performance, including academic detailing, patient-activation, on-line courses, asynchronous learning networks, fax-transmitted updates and medical updates using push technology.

Current research initiatives include evaluating the effectiveness of strategies to disseminate and promote adoption of practice guidelines, use of academic detailing, use of chart reminders and feedback to physicians, as well as measurement of physician learning and patient health outcomes. Continuing initiatives include development of new Internet and print case study courses, additional audio conferences, focused CME activities offered throughout the State of Alabama for primary care physicians, and activating patients to change physician behavior. For the current application, the Division will assist with engaging stakeholders and disseminating the results of the trainees projects.

g. Department of Health Care Organization and Policy, SPH

The UAB Department of Health Care Organization and Policy has over 20 active faculty appointments. Programs in Health Care Organization and Policy provide training and education at the master's and doctoral level. At the master's level, curricula are available in the analysis of health services policy or in the management of public health services resources. At the doctoral level, the program offers rigorous training in research methods and evidence-based public health practice suitable for careers in public health leadership, or academic settings. Programs require mastering major concepts of health economics, public health management and planning, health policy, outcomes research, and health services evaluation. Master of Public Health (M.P.H.) degrees are offered in health policy, health care organization, and general theory and practice, maternal and child health policy and leadership, outcomes research, public health preparedness as well as coordinated degree options in business, optometry, public administration and juris doctorate. The department's Doctor of Public Health (DrPH) degree has concentrations in Public Health Management or Maternal and Child Health Policy and Leadership. For the current application, the Department will assist curriculum development, have members on the Internal Advisory Panel and rotation leaders as well as mentors and potential T32 trainees.

h. Department of Epidemiology, SPH

Epidemiology has been a central part of medicine and public health at UAB from the early 1970's. Since the founding of the SOPH, Epidemiology has been the largest department in terms of the number of faculty, number of students, and extramural research support. In 1998, the Departments of Epidemiology and International Health were combined. The Epidemiology Ph.D. Program Faculty include faculty who are in the International Health Unit. Our sixteen full-time Epidemiology Program faculty have active research grants totaling over \$3.6M for research in Alabama, the United States, and around the world. Areas of research include occupational hazards in the chemical industries, diabetes, cardiovascular disease, cancer, HIV/AIDS, systemic lupus erythematosus, mental retardation, farm safety, Alzheimer's Disease, human papillomavirus and immunosuppression, sexually transmitted disease prevention, and cancer control.

Faculty interact with key researchers and clinical units throughout the University, the National Institutes of Health, the Centers for Disease Control and Prevention, and with international partners such as the International Center for Diarrheal Diseases Research in Bangladesh. The epidemiology faculty provide editorial advice to over 40 journals and peer review, expert assistance and research consultation to the World AIDS

Foundation; the Centers for Disease Control and Prevention, the Agency for Toxic Substances and Disease Registry, the National Institute of Occupational Safety and Health, the National Center for Health Statistics; the National Institutes of Health; the Alabama Departments of Public Health, Mental Health, and Education; multiple units within UAB including the Comprehensive Cancer Center, the Veterans Administration Hospital, the University Hospital, the Center for AIDS Research, the Center for Health Promotion, the Injury Control Research Center, the Sparkman Center for International Public Health Education, Gorgas Institute, and others. In addition, several faculty members participate on industry advisory panels for occupational safety in private industry. For the current application, the Department will assist in curriculum development, offer members to the Internal Advisory Panel, rotation leaders as well as mentors and potential T32 trainees.

i. Department of Biostatistics, SPH

The Biostatistics Department of the School of Public Health and the associated Scientific Studies Coordinating Center are housed together in the Ryals Building. All of the primary faculty of the department have considerable experience in providing statistical methodological support to researchers on the campus and, as indicated by the publications in the Research Base of the UAB-MCRC, have formed productive, long-term collaborations. In addition, the professional staff of the Coordinating Center have extensive experience in providing data entry, data management and quality assurances support to investigators in both short and long term projects. Statistical software packages utilized by the department include SAS, SPSS, StatXact, LogXact and Lisrel.

The Department has over 25 faculty members and 51 staff. The Department's research emphases are in the broad areas of statistical genetics and the management of large epidemiological studies and clinical trials. Research directed by faculty in the Department is supported in excess of \$14 million annually. The Department is supported by both a Data Management group and an Information Technology (IT) support group. The Data Management programming staff has experience in producing stand alone, client server or web-based data management systems, using JAVA, XML, C++, VB, SQL, FoxPro, MS Access and with the ability to create applications on both Linux and Microsoft platforms. The Data Management group has developed three important lines of data collection applications. The first type of application is the SPIRIT system for paper form-based data collection and management. This system is responsible for collecting and managing data for studies having 30,000 participants, such as the REGARDS project, a longitudinal study of racial differences risk factors for stroke with a national sample followed over time. It is designed to be easy to use, to have accurate OCR capability and to provide timely reports on activities and data flows in the system. The second class of application is a multi-tier client server data collection application system that allows remote sites to maintain databases synched to the Department central database, along with the ability to automatically update the client software in the remote sites. The third product is a Clinical Study Data Management System Authoring Tool that is comprised of a set of four applications geared to the creation of web-based electronic data entry and management systems that meet CFR 21-11 guidelines. All of these systems are operational and in use in one or more collaborative studies.

IT support is responsible for server, desktop, laptop and computer laboratory equipment and software support. Additionally, this group provides support for over 500 PCs and laptops used by SOPH faculty, staff and students. The IT support group also is used for troubleshooting in clinical sites if problems arise in the online or web-based systems. The IT group operates a server farm containing the following equipment: (3) Dell 1950 servers; (4) Dell 2850 servers; (4) Dell 2950 servers; (2) SUN quad processor Opteron server with 16 GB memory running Linux; and (3) Promise VTRAK E610S fibre storage arrays in a fibre connected SAN. The Dell servers are the backbone of the SOPH's IT resources and run Windows 2008 operating systems. These servers provide email service via Microsoft's Exchange email application, printer management via PHAROS printer management system, centralized antivirus support via Microsoft Forefront, distance learning software using WebCT, streaming media using RealNetworks Helix server, and web support through Microsoft's IIS. The SOPH provides a combined online network storage capacity of over 26 TB. All servers are physically secured, follow appropriate multi-level access control protocols, and maintain long term data security via daily

and monthly archival procedures. All investigators at UAB are connected to a TCP/IP local area network within the SOPH building.

System security is, at a minimum, maintained via tiered permissions based on individual and group settings; centrally enforced password policy requiring complex passwords that must be changed on a periodic basis, centrally managed desktop and server antivirus packages, desktop firewalls, and daily backups of all server based storage. The Opteron and SUN LINUX servers provide a platform for the development and operation of numerically intensive software, such as SAS and STATA. Additional computing resources include Oracle, Microsoft SQL, MySQL as well as other database packages and computing software. Substantial University computing resources exist with access to supercomputers and parallel processors via the Department of Computer Science working closely with the Biostatistics Department and its Section on Statistical Genetics.

Study faculty and staff with the appropriate training and approval (HIPAA, etc.) have access to PC-based systems that are part of the networked system described above, with capacities that varies between staff members but generally meeting the needs of the proposal. Access to the data is controlled through a networked integrated database system developed specifically for tracking and managing the flow of participants for the study. Permissions tables are managed centrally by the programming staff which are linked to user names to allow access to specific domains of the database on an "as needed" basis to study staff. For the current application, the Department will provide study design and analysis support for trainees. This will

be led by D. Redden, Associate Professor of Biostatistics who has experience and interest in multi-site clinical trials and modeling of disease transmission.

j. Department of Health Behavior, SPH

The overarching goal of the Department of Health Behavior is to assess health behaviors and needs in specific populations and to develop, manage, and evaluate health promotion and disease prevention programs.

Students and trainees from the Department of Health Behavior learn to develop behavior change programs utilizing theories and methods from the social and behavioral sciences along with state-of-the-art techniques and methods for health program evaluation. The Department's faculty conduct research that aim to improve the health along the entire lifespan from children to the elderly. Their research also examines health issues relevant to minorities and other populations. There is a strong encouragement for trainees to become involved with faculty research projects on health-related issues such as HIV/AIDS and other sexually transmitted diseases, tobacco and other substance use, poor dietary practices, cardiovascular disease, cancer, and intentional or unintentional injuries. The Department is the primary appointment of the proposed T32 Dissemination Advisor, W. Norton, PhD. Also for the current application, the Department will make available members to the mentors pools (e.g. C. Kohler, DrPH, Professor of Health Behavior) and the potential to link the T32 Predoctoral program with the Department's PhD in Health Education and Health Promotion.

k. Department of Health Services Administration, SHP

The Department of Health Services Administration includes seven top-ranked programs, as well as a variety of continuing education opportunities for health services executives. Several of the programs are the only one of their kind in the state, first of their kind in the nation, and the Master of Science in Health Administration Program is ranked 5th in the nation. The Department currently has over 30 primary faculty with an additional 20 secondary faculty that assist in the Department's mission.

The mission of the Department of Health Services Administration (HSA) is to improve the health and well being of society through advancement of the conceptual, methodological, and leadership skills of health services executives. The Department provides a superior environment for the education of students, innovative approaches to enhance the skills and knowledge of practicing health services executives, and research that advances understanding of health services administration and informatics.

Research on health services organization and financing has become central to the Department's mission. The new knowledge generated is having a direct impact on health management practice, supports the quality of educational services and provides needed financial resources. Research activities are conducted to improve the organization, financing, and delivery of health services. External grants and contracts provide support for research conducted by faculty and students. Faculty and students participate in national research meetings and forums, as well as publish in refereed journals. For the current application, the Department will make available members to the Internal Advisory Panel, rotation leaders as well as mentors and potential T32 trainees.

B. Relevant Cohorts and Databases Available to Trainees at UAB

1. Medicare, Medicaid, and Administrative Databases from Private Insurers

See C.1. below.

2. Coronary Artery Risk Development in Young Adults (CARDIA)

The Coronary Artery Risk Development in Young Adults (CARDIA) Study examines how heart disease develops in adults. In 1986, it began with a group of 5,115 African-American and Caucasian men and women aged 18-30 years. The participants were selected so that there would be approximately the same number of people in subgroups of race, gender, education (high school or less and more than high school) and age (18-24 and 25-30) in Birmingham, AL; Chicago, IL; Minneapolis, MN; and Oakland, CA. These same participants were asked to participate in follow-up examinations during 1987-1988 (Year 2), 1990-1991 (Year 5), 1992-1993 (Year 7), 1995-1996 (Year 10), 2000-2001 (Year 15), and 2005-2006 (Year 20). A majority of the group has been examined at each of the follow-up examinations (90%, 86%, 81%, 79%, 74%, and 72%, respectively).

While the specifics of each examination has differed somewhat, data have been collected on a variety of factors believed to be related to heart disease. These include conditions with clear links to heart disease such as blood pressure, cholesterol and other lipids. Data have also been collected on physical measurements such as weight and skinfold fat, as well as lifestyle factors such as substance use (tobacco and alcohol), dietary and exercise patterns, behavioral and psychological variables, medical and family history, and other chemistries (e.g., insulin and glucose). In addition, subclinical atherosclerosis was measured via echocardiography during Years 5 and 10, computed tomography during Years 15 and 20, and carotid ultrasound during Year 20. Safford, Lewis, and K. Saag have mentored trainees at UAB using CARDIA data.

3. Consortium for the Longitudinal Evaluation of African Americans with Early RA (CLEAR)

Funded by the NIH the Consortium for the Longitudinal Evaluation of African-Americans (A-A) with Early Rheumatoid Arthritis (CLEAR) cohort has identified and collected data on 450 A-A with RA of less than 2 years disease duration and establishing a centralized clinical database, DNA, serum, and cell bank. Curtis is a primary investigator in this cohort and is available for mentoring trainees interested in this database.

4. (ENCOURAGE): Evaluating Community Peer Advisors and Diabetes Outcomes in Rural Alabama

ENCOURAGE is a group-randomized, controlled implementation trial in partnership with the UAB DRTC and established community coalitions. It is designed to improve diabetes health outcomes in adult patients (> 18 years of age) with uncontrolled diabetes living in Alabama's Black Belt region. Peer advisors with diabetes or familiar with its management will counsel and link patients to clinical care and community resources. Part of the 12-month, weekly intervention for 8 weeks, followed by monthly contacts for the remainder of the year, is empowering/activating patients to self-manage their diabetes. Four community coordinators, 36 peer advisors, and 424 research participants were enrolled for the full study. The infrastructure established through the initial study has led to four additional projects. The first is examining the cost-effectiveness of using peer advisors. The second will assess peer support intervention for patients with diabetes and chronic pain. The third will examine peer advisor roles and integration into a larger health care team. Finally, investigators will look to implement the program in Birmingham. All of these projects will provide T32 trainees with the opportunity to

conduct research in disadvantage areas and engage both patients and peer advisors in HSOER.

5. The Global Longitudinal Study of Osteoporosis in Women (GLOW)

GLOW is an international study that collects, analyzes and distributes data to understand ways in which practice patterns influence the care of patients at risk for osteoporotic fragility fractures. GLOW is a prospective, longitudinal, observational study of women 55 years of age and older who visited a primary care physician during the two years prior to the study. A major study objective is to characterize the clinical and demographic attributes of patients at risk of fracture from representative sites in Europe, North America and Australia in order to improve patient outcomes. Data on osteoporosis risk factors, treatment approaches, patient behavior, and fracture outcomes with an annual patient survey over a 5 year period are collected. GLOW participants are from 10 countries, 17 regional sites with 706 (337 in the US) physicians enrolled and 60,461 (31,074 in the US) women enrolled. K. Saag has mentored junior faculty using GLOW data.

6. The Osteoporotic Fractures in Men (MrOS) Study

The Osteoporotic Fractures in Men (MrOS) Study (Lewis, CE PI) funded by the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), the National Institute of Aging (NIA), and the National Cancer Institute (NCI), began in July 1999. MrOS a 7-year multi-center prospective, longitudinal, observational study examining risk factors for vertebral and all non-vertebral fractures in older men, and of the sequelae of fractures in men enrolled approximately 6000 men aged 65 and older). The specific aims of the MrOS study include: (1) to define the skeletal determinants of fracture risk in older men, (2) to define lifestyle and medical factors related to fracture risk, (3) to establish the contribution of fall frequency to fracture risk in older men, (4) to determine to what extent androgen and estrogen concentrations influence fracture risk, (5) to examine the effects of fractures on quality of life, (6) to identify sex differences in the predictors and outcomes of fracture, (7) to collect and store serum, urine and DNA for future analyses as directed by emerging evidence in the fields of aging and skeletal health, and (8) define the extent to which bone mass/fracture risk and prostate diseases are linked. Lewis and Curtis have mentored junior investigators using this cohort.

7. The Multicenter Osteoarthritis Study (MOST) Study

Since inception in 2002, The Multicenter Osteoarthritis Study (MOST) Study, funded by a grant from the National Institute On Aging (Cora Elizabeth Lewis PI, UAB), is a cohort of 3,026 adults aged 50 to 79 years from the community with either symptomatic knee osteoarthritis or high risk of knee osteoarthritis based on obesity, knee pain, or previous knee injury. This large, multifaceted and comprehensive study of persons with knee OA, or at high risk of disease, examines the relation of potentially important risk factors to the development or progression of a major disabling disease and to provide new insights into disease biology and potential opportunities for prevention. Lewis and Curtis have mentored junior investigators using this cohort.

8. Reasons for Geographic And Racial Differences in Stroke (REGARDS)

Funded in 2003 (R01) by the National Institute of Neurological Disorders and Stroke (NINDS), the Reasons for Geographic And Racial Differences in Stroke (REGARDS) cohort, is a prospective study of 30,000 Caucasian and African American adults many of whom reside in the southern "Stroke Belt" and who have an increased risk for osteoporosis based on their age. G. Howard, Chairman of the UAB Department of Biostatistics and a HSOER mentor, is the principal investigator of the REGARDS study. The purpose of the REGARDS project is to understand why people in some parts of the country develop more strokes than people in other parts of the country, and why African-Americans develop more strokes than whites. Participants are randomly sampled with recruitment by mail then telephone, where data on stroke risk factors, sociodemographic, lifestyle, and psychosocial characteristics are collected. Written informed consent, physical and physiological measures, and fasting samples are collected during a subsequent in-home visit. Participants are followed via telephone at 6-month intervals for identification of stroke events. The novel aspects of the REGARDS study allow for the creation of a national cohort to address geographic and ethnic differences in stroke.

A REGARDS sub-study also being conducted at UAB by Curtis, focuses on the epidemiology of fractures and associated morbidity within the REGARDS cohort. This study represents one of the first population-based studies focused on African American patients at risk for osteoporosis and insufficiency fracture. This study will help confirm the novel association between bone and vascular disease previously observed in large population based studies of predominantly Caucasian women. It has the potential to provide significant insight into factors leading to fracture among both African American and Caucasian men, who are generally understudied in osteoporosis research and undertreated by clinicians. Safford is conducting REasons for Geographic And Racial Differences in Stroke-Myocardial Infarction study. She and colleagues are examining mechanisms to explain regional and racial differences in acute coronary heart disease mortality, comparing whether mechanisms operate differently in African Americans and Whites. This is an ancillary study to the REGARDS study, which is providing infrastructure to follow 30,239 community-dwelling individuals longitudinally; about half are African Americans. G. Howard, Curtis, Safford, V. Howard and Muntner are available to mentor junior investigators using this cohort.

9. Systolic Blood Pressure Intervention Trial (SPRINT)

The University of Alabama at Birmingham serves as one of the NIH/NHLBI Clinical Center Networks (CCN) for the Systolic Blood Pressure Intervention Trial (SPRINT): Co-PI, Lewis. SPRINT is a randomized, multi-center clinical trial testing the effects of intensive lowering of systolic blood pressure (SBP) on preventing cardiovascular disease (CVD). Approximately 7,500 participants will be randomized into either the lower SPB goal of less than 120 mmHg (intensive treatment group) or the standard SPB goal of less than 140 mmHg (control group). Participants will be 55 years or older with SPB greater than or equal to 130 mmHg and at least one additional CVD risk factor. Other objectives include (stage 3 CKD subgroup of ~3,500 persons) determining whether treating to a lower SBP goal will reduce CVD and renal disease progression, determine the relative impact of the two treatment strategies on QOL and compare their relative cost effectiveness, and to test whether treating to a lower SBP will reduce the rate of age-related cognitive impairment. The UAB CCN plans to recruit from 16 sites located in the Southeast including the states of Alabama, Mississippi, Louisiana, Tennessee, Texas, and Florida.

10. UAB 1917 HIV Clinic Cohort

The 1917 clinic cohort is a prospective, observational HIV clinical cohort study established in 1992 through support by CFAR. It includes extremely well characterized patients (>7000 overall, 1700 active). In 1999, the database was expanded to include real-time collection of clinic utilization data, thereby allowing cost / expenditure analyses. In August 2004, the UAB 1917 Clinic deployed a client-server based point-of-care electronic medical record system (1917 EMR) developed within the clinic to its own specifications. The 1917 EMR system allows for real-time collection of medication, laboratory, clinical, behavioral, and health care utilization data. Over the years numerous clinical and behavioral comparative effectiveness studies have been conducted through the cohort. These include evaluation of the “efficacy vs. effectiveness” of initial ART regimens in patients treated in clinical trials vs. routine care.

The UAB 1917 Clinic Cohort, is housed at the UAB 1917 HIV/AIDS Clinic on a Dell PowerEdge 2300 server, which is part of a seven server farm that provides the 1917 Clinic IT infrastructure. This structure allows for flexible and comprehensive data query capabilities. The current storage capability exceeds 500 GB and contingency/disaster recovery procedures are in place with remote real-time back-up of data at two additional sites. Over 100 users utilizing our 93 personal computers (including 4 computers dedicated to trainees) regularly access the applications housed in this secured environment. Additionally, 7 exam rooms are outfitted with touch screen computers linked to a web-based platform for completion, transmission and secure storage of Patient Reported Outcomes (PROs) questionnaires completed routinely during clinic visits. Shared conference rooms, fax machines, scanners, and copy machines are co-located and readily available to 1917 Clinic Cohort personnel and trainees on the first floor of the Community Care Building. M. Saag, Mugavero, and Willig are available to mentor junior investigators using this Cohort.

11. UAB Study of Aging (SOA)

The UAB Study of Aging is a prospective, observational study of a population-based sample of 1000 community-dwelling Medicare beneficiaries, stratified by sex, race, and urban/rural residence now beginning its 3rd cycle of R01 funding from NIA. The hypothesis underlying this major research initiative is that potentially modifiable factors predict mobility (life-space) trajectories associated with aging among community-dwelling African Americans and whites. Allman and Locher have mentored junior investigators using this cohort.

12. Healthcare Cost and Utilization Project (HCUP)

The Healthcare Cost and Utilization Project (HCUP) is a family of health care databases and related software tools developed through a Federal-State-Industry partnership to build a multi-State health data system for health care research and decision making. HCUP is sponsored by the Agency for Healthcare Research and Quality (AHRQ) as part of its mission to improve the quality, safety, efficiency, and effectiveness of the Nation's health care system.

HCUP databases bring together the data collection efforts of State data organizations, hospital associations, private data organizations, and the Federal government to create a national information resource of patient-level health care data. HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988. These databases enable research on a broad range of health policy issues, including cost and quality of health services, medical practice patterns, access to health care programs, and outcomes of treatments at the national, State, and local market levels.

The Lister Hill Center at UAB (Morrisey, Director) has HCUP and National Inpatient Sample (NIS) data through 2008. It is available to all Lister Hill scholars and trainees through a sponsoring Lister Hill Scholar. Morrisey and Menachemi have expertise and experience mentoring junior investigators using this data.

13. Atlanta Census Research Data Center (ACRDC)

Located at the Federal Reserve Bank of Atlanta, the Atlanta Census Research Data Center (ACRDC) seeks to provide qualified researchers in Atlanta, and around the Southeast, with the opportunity to perform statistical analysis on non-public Census microdata. The ACRDC, established 2011, is 1 of 8 centers in the United States and is a partnership between the U.S. Census Bureau and a consortium that includes Georgia State University, the Federal Reserve Bank of Atlanta, the Centers for Disease Control and Prevention (CDC), Emory University, Georgia Tech, the University of Alabama at Birmingham (Morrisey, Site-PI), and the University of Georgia. There are four general categories of data on which qualified researchers may perform statistical analysis inside the secure ACRDC: 1) Economic Data; 2) Demographic Data; 3) Mixed Data; and 4) Health data. Morrisey is available to work with Trainees interested in using this data.

14. Cancer Care Outcomes Research and Surveillance Consortium (CanCORS)

UAB serves as a Primary Data Collection and Research (PDCR) site in the NCI-funded Colorectal and Lung Cancer CanCORS consortium (Fouad, PI). This research consortium of eight grantees measures the quality of cancer care and associated health outcomes in the United States. The project supports prospective research in a cohort of approximately 10,000 patients with newly diagnosed lung cancer or colorectal cancer recruited from geographically diverse populations and health care systems. The UAB PDCR site is for newly diagnosed cases of both lung and colorectal cancer with special emphasis on African Americans. Fouad is an author of the publication that introduced the goals and methods of the Consortium to the broader community of cancer researchers and clinicians; several manuscripts elucidating the findings of the consortium with regards to ovarian cancer and the recruitment of patients to cancer clinical trials are in the process of being submitted for publication. Fouad has mentored junior investigators using this cohort.

C. Collaborators for Elective Local, Regional, and Remote Short Rotations

1. Pharmaco-Epidemiology and Economics Research (PEER) Unit Medicare/Medicaid Database Group

UAB faculty (Delzell, Curtis, and Kilgore) have considerable experience in managing and analyzing the

Medicare 5% sample and (50 state) Medicaid (MAX) data. Work to date has predominately focused on the epidemiology of osteoporosis, bone mass measurement, and the longitudinal comparative effectiveness and safety of biologic medicines. The data management and analysis team includes two statisticians, two senior systems analysts and five additional analysts. Data management and analysis tasks and resolution of study design and statistical analysis issues are coordinated through weekly Medicare/Medicaid Data Group meetings, attended by investigators and project staff.

One strength of Medicare and Medicaid is that the computerized pharmacy records provide an objective, detailed, high-quality, and relatively low-cost measure of drug exposure. Inpatient, outpatient, nursing home, and other files provide information on outcomes and other important study variables. Although the limitations of these data always must be considered, Medicare and Medicaid databases have long been recognized as an essential resource for pharmacoepidemiology and health services research.

CMS encourages researchers to use its diagnosis and treatment database. They will provide a file that contains all records submitted with date of birth, gender and date of death information. The Medicare ID returned on this file is an encrypted ID that contains no identifying information including no component of the SSN. The encryption is uniquely created for this proposed study and does not correspond in any way to Medicare data obtained for other studies. CMS has well established, secure procedures for linking research subjects' identifiers to Medicare files for purposes such as this. They uniquely encrypt IDs for each project. Thus, the Medicare data received cannot be combined with Medicare data from any other source or project without CMS assistance.

The Medicare component of this resource includes (1) 1999-2008 claims on a national sample of over 3.3 million beneficiaries, including all claims from inpatient, outpatient, physician, skilled nursing, home health and hospice providers; (2) Medicare data on over 18,000 subjects included in a large prospective cohort study of stroke and other medical conditions; (3) Medicare data on subjects with autoimmune disorders included in a large retrospective cohort study; and (4) Medicare data linked to Surveillance Epidemiology and End Results (SEER) cancer registry data on over 400,000 cancer patients diagnosed during the period 1999-2005. The Medicaid database includes: (1) national claims data on over 55 million beneficiaries for 1999-2002; (2) claims data on over 490,000 Medicare/Medicaid dual-eligible beneficiaries for 2003-2005; and (3) claims data on subjects included in the special cohorts mentioned above. In addition, we have Medicare Part D data for 2006-2007 on the 5% national sample of beneficiaries, and we have Medicare Current Beneficiary Survey access to care and cost to use data for 1999-2005 and the provider of service national database for 1999-2006.

Computing resources are housed in the Multimedia Information and Technology services facility in the School of Public Health. The facility is locked and all servers and drives are physically secured. Entry into sensitive areas requires appropriate identification and passwords for access. Computing resources available for the group consist of several Dell PowerEdge (PE) servers, tape drive units, and software for word processing, data management, and statistical analyses. The primary file server on which analyses will be run is a Dell PE 6950 with 32gb of RAM and four, dual-core processors running Microsoft Windows 2003 Enterprise Edition. Approximately 20tb of disk space is available for data storage and is optimized for storing large SAS datasets across separate drive arrays. A Dell robotic tape library is used to back up data on a nightly basis. Additional Dell servers are used for Active Directory, Web server, and other system management tasks. Software available for projects includes SAS versions 9.1.3 and 9.2, R version 2.8.1, Stata version 10, Microsoft Office 2003 & 2007, and other utility software.

Data security and integrity is accomplished by a combination of hardware and software protocols. Comodo and Microsoft firewall software packages are used to prevent access from unauthorized computers. Microsoft Forefront is used to provide anti-virus protection. Access to the server is restricted to computers located on the UAB campus with specific IP addresses. Data containing individually identifiable data are stored in encrypted, password-protected datasets that can only be accessed through a Remote Desktop Connection to the server.

Data integrity is accomplished by a nightly backup routine and by replicating the data to a secure, off-site server. The UAB Office of Internal Audit conducted an audit of the facility where the data are housed. Based on their recommendations, additional security protocols were implemented and the User Authorization Agreement was amended to reflect stricter CMS guidelines. The auditor was pleased with the attention to detail and also gave suggestions for maintaining a secure environment. All project personnel are required to have current IRB and HIPAA training and will be signatories to Data Use Agreements in order to access any research identifiable data.

Rotation Supervisors: Meredith Kilgore, PhD, RN and Jeffrey R. Curtis, MD, MPH, MS

Rotation Description: *Learning objectives: 1) Develop study design specifications and translate these into data development and data analysis work plans; 2) Understand problems and limitations of the database and methods to minimize these problems; 3) Specify and implement methods to validate claims-based algorithms designed to identify subjects with diseases, conditions, procedures or other attributes of interest; and 4) Analyze the data for a particular project and present results.* Medicare and Medicaid data have been used for epidemiologic and health services research for over two decades and with the advent of part D data are now being used for pharmacoepidemiologic, CER and PCOR research. UAB investigators in the Schools of Public Health and Medicine have developed a large national Medicare/Medicaid database resource for use in such research. The PEER rotation will provide trainees with skills-building experience pertaining to the use of the data for HSOER by having trainees join an active study that is based on Medicare and/or Medicaid data. Trainees interested in the Medicare/Medicaid database rotation will attend weekly Medicare/Medicaid Data Group work-in-progress meetings to become familiar with ongoing research and to develop a collaborative relationship with faculty, staff and other trainees working with the data. The trainee will select a project of interest, and then attend all project meetings and additional relevant work group meetings over the 2-3 months of the rotation. Trainees will have a primary faculty mentor and will have regular access to other participating faculty, as well as access to staff experienced in database management, programming, medical record retrieval and abstracting for validation research and development of data use agreements to obtain additional/new Medicare and Medicaid data. Examples of ongoing or future research studies the trainee could join for the rotation are: 1) Safety and comparative effectiveness of biologic agents used to treat autoimmune disease, 2) Safety and comparative effectiveness of therapeutic agents for osteoporosis, 3) Validation of claims-based algorithms for osteoporotic fractures, 4) Costs and utilization of services among beneficiaries with osteoporotic fractures, 5) HIV and fractures, and 6) Medication adherence.

2. Samford University McWhorter School of Pharmacy

The McWhorter School of Pharmacy at Samford University (MSOP) is one of two accredited pharmacy schools in Alabama and the only one in Birmingham. Founded in 1927, the School of Pharmacy has a rich history of training Pharmacists to meet the increasing demands of the state of Alabama. Housed within the School of Pharmacy is the Samford University Global Drug Information Service (SUGDIS). As a fee-for-service operation, SUGDIS provides comprehensive drug information services to numerous clients within a variety of health care settings (e.g., hospitals, nursing home). The services provided include, but are not limited to, drug information consults, committee support (Pharmacy and Therapeutics [P&T], Institutional Review Board [IRB], Infection Control), formulary management, policy and procedure development, drug therapy practice guidelines generation, drug formulary list generation, an Antibiotic Management Program, Drug Usage Evaluation (DUE) and Adverse Drug Reaction (ADR) programs, and nursing home consulting. In addition, SUGDIS also engages in teaching activities including didactic courses in Drug Information Systems and Drug Literature Evaluation as well as experiential based precepting of Pharm.D. students completing the Drug Information Advanced Practice Experience (i.e., clerkship rotation). Information services are provided to health care professionals of the subscribing institutions and Samford faculty by a staff of drug information specialists and residents, McWhorter School of Pharmacy librarian and clerical support. SUGDIS has extensive computerization of drug information databases and resources. Furthermore, an extended collection of other resources (textbooks, journals, databases, etc.) is available within either the Center or the Samford University Library.

The pharmacy library contains books, journals, and 13 computer work stations. The SUGDIS occupies over 4,000 square feet of the third floor of the MSOP; the drug information center occupies approximately 60% of this space. Work areas include the drug information advanced pharmacy practice experience student work area, circulation desk, faculty/student reading room, executive training/seminar room, and private offices for faculty and staff. Over 900 linear feet of shelving space is available. Two security gates serve as deterrents to references/resource (i.e., journals, books) theft. The student reading/study room has seating for approximately 25 individuals and is heavily utilized throughout the academic year. This area displays current year journals and newsletters on over 200 linear feet of shelving. The library has approximately 950 books and 50 print journals, which does not count those available in the university library.

Rotation Supervisor: Maisha Freeman PharmD

Rotation Description: *Learning Objectives:* 1) *Understand how to successfully retrieve and critically evaluate primary pharmaceutical literature,* 2) *Understand criterion for distinguishing between agents within broad pharmacologic classes.* The McWhorter School of Pharmacy at Samford University is one of two accredited pharmacy schools in Alabama and only one located in Birmingham. Housed within the School of Pharmacy is the Samford University Global Drug Information Service (SUGDIS). SUGDIS provides comprehensive drug information services to numerous clients within a variety of health care settings (e.g., hospitals, nursing homes). SUGDIS has extensive computerization of drug information databases and resources. Other resources (textbooks, journals, databases, etc.) are available within either the Center or the Samford University Library. This rotation will be of particular interest to Trainees who do not possess medical backgrounds or who have not studied pharmacology formally in their prior training. The goal is to improve the Trainees' ability to identify, compare, and access drug information in a way that would allow them to compare the effectiveness of drugs. The trainee will be expected to complete a small project, attend and prepare journal club presentations, attend sessions designed to improve their knowledge related to study design and the appropriate use of drug products. On completing the rotation, the trainee will be able to: effectively critique primary literature and perform a comprehensive literature search. Trainees will be offered a short "mini-course" on basic principles of pharmacology with special emphasis on the top 200 most frequently prescribed drugs. This course will allow Trainees to develop an understanding of the pharmacological properties of individual agents and various drug classes. Importantly, Trainees will learn to apply their understanding of pharmacology in making rational decisions in the management of medication therapy. Additionally, this rotation would provide critical information that would allow the trainee to understand how to effectively compare treatment modalities. This rotation is especially vital when considering the heterogeneous background of potential Trainees who come from many diverse fields.

3. CFAR Network of Integrated Clinical Systems (CNICS)

The CFAR Network of Integrated Clinical Systems (CNICS) was funded in Sept 2006 as an R24 NIH-funded initiative to merge electronic medical records clinical data collected at eight CFAR sites (and one non-CFAR site) to enhance patient-based outcomes research. The national center is based at the University of Alabama at Birmingham, with additional sites at Case Western Reserve University, University of California, San Francisco, the University of Washington, the University of California, San Diego, Fenway Community Health Center of Harvard University, University of North Carolina, Vanderbilt University, and Johns Hopkins University (JHU). The current integrated electronic medical record contains longitudinal data on over 15,000 patients. Each CNICS site utilizes a point-of-care electronic health record (EHR) system to organize, record, and plan for the care of all HIV+ patients, including those who would not typically be eligible for clinical trials or more traditional, selective HIV cohorts. CNICS capitalizes upon these existing EHR systems, which at most sites have captured clinical data since 1995, and combine them into a single research enterprise.

Rotation Supervisor: Michael Mugavero, MD, MPH

Rotation Description: *Learning Objectives:* 1) *Learn how the CNICS' integrated system of clinical, behavioral and biological data is used to answer research questions;* 2) *Learn benefits of CNICS data versus other cohorts and other medical records;* 3) *Understand how to successfully retrieve and critically evaluate CNICS*

data; 4) Design a study to be completed within CNICS As a clinic-based research network, CNICS provides trainees the opportunity to see the outcomes of clinical decisions and management options made daily in the care of HIV infected individuals. Unlike data collected in structured interviews or through retrospective medical record review, CNICS captures a broader range of information associated with the rapidly changing course of HIV disease management through collection of data at the point-of-care. A single, fully integrated database links each patient record to a diverse collection of clinical, behavioral, and biological data. The flexibility of this consortium enables CNICS and trainees to address scientific questions that cannot be answered through any other collaborative cohorts. Funded by an R24 infrastructure award in 2006, CNICS has evolved to become a fully mature platform that can support translational, clinical, and behavioral research projects from any investigator including trainees who desires to use the platform as part of their funded research projects or as part of a pilot project to gain further research support. M. Saag, Mugavero, and Moneyham have mentored junior investigators using this Cohort.

4. Alacare Home Health and Hospice

Headquartered in Birmingham, Alabama, Alacare Home Health & Hospice is dedicated to providing patients with the highest level of skilled nursing, rehabilitative, palliative and hospice care available in the most cost-effective environment-the patient's own home. The Alacare team includes nurses, home care aides, physical therapists, occupational therapists, speech-language pathologists, medical social workers, medical nutritionists and chaplains. Founded in 1970 by Charles D. Beard, Jr., the agency is still owned and operated by the Beard family today. With 23 branch offices covering almost every county in the state, Alacare is Alabama's oldest and largest privately owned, Medicare-certified home health agency.

Alacare has initiated fall prevention education, diabetes education; mental health nursing; nutritional services; and infusion therapy as part of patient care plans. Alacare is a strong supporter of research. They have partnered with UAB on two NIA-supported nutritional studies and on an AHRQ-sponsored osteoporosis intervention study. Each Alacare office is participating as a clinical practice site for UAB programs and their associated research.

Rotation Supervisors: Steven Waits, RN, BSN and Tina Reed, RN

Rotation Description: *Learning Objectives: 1) Understand the strengths and limitations of home health care data for conducting HSOER; 2) Examine impact of new care plans on patient care and staff workload; 3) Develop effective models for translating research findings and national guidelines (evidence implementation research).*

The variety of care provided by Alacare provide a range of opportunities for the Trainees to learn about healthcare delivery in a Home Healthcare setting. Furthermore, Trainees will have the opportunity to see home health care implemented in urban and rural settings. Trainees will be paired with an Alacare programmer who will guide them through assessing the availability and relevance of Alacare data for a HSOER question. Alacare diverse health care staff allows Trainees the opportunity to work with nurses, physicians and administrators to facilitate implementation of research findings into practice change. Alacare is very supportive of techniques that improve patient care. M. Kilgore, J. Locher, and J. Curtis have conducted research projects in collaboration with Alacare personnel.

5. Vanderbilt Evidence-based Practice Center

In 2003, AHRQ's Effective Health Care Program was created from the Medicare Prescription Drug Improvement and Modernization Act (MMA), which authorizes AHRQ to conduct and support research with a focus on comparing the outcomes and effectiveness of different treatments and clinical approaches as well as communicate its findings widely to a variety of audiences. In doing so, the Effective Health Care Program partners with designated networks of researchers and clinical teams, through the DEcIDE Network (Developing Evidence to Inform Decisions about Effectiveness), the Evidence-based Practice Centers (EPCs) and the Centers for Education & Research on Therapeutics (CERTs). Participation in each of these research networks is extremely competitive, and Vanderbilt is privileged to be funded to participate in all three. All three of these research networks predated the MMA legislation. Vanderbilt was among the first group of both DEcIDE and

CERT networks. Vanderbilt's more recent participation as an EPC reflects the growing strength in health services and policy-relevant research.

The Vanderbilt Evidence-based Practice Center is one of fourteen centers in the United States and Canada funded by the Agency for Healthcare Research and Quality to conduct systematic evidence reviews of a variety of clinical topics and therapies. The core staff members of the Center have been involved in systematic reviews and comparative effectiveness research for more than a decade, both within and outside of AHRQ's Effective Healthcare Program. They successfully competed in 2007 to be designated an EPC, and since then have expanded the Center to involve more than 18 faculty members, 12 staff and nine trainees. They bring to this effort their decade of methodologic expertise in the conduct of systematic reviews, particularly in new and emerging technologies. In the two years that they have been designated an EPC, the team has worked on or completed 6 reviews and is involved in the development of training materials for investigators seeking to conduct systematic reviews. Most recently, Vanderbilt's EPC was one of 8 EPCs awarded funding under the ARRA legislation for three years to conduct focused systematic reviews in the area of maternal and child health. Dr. Melissa McPheeters, PhD, MPH, is Director of the EPC

Rotation Supervisor: Melissa McPheeters, PhD, MPH

Rotation Description: *Learning Objectives: 1) Develop and refine research questions and analytic frameworks; 2) Conduct literature review; 3) Develop and test data abstraction forms; 4) Learn methods of abstracting data into evidence tables; 5) Develop summary tables and prepare evidence synthesis reports.*

Systematic reviews conducted through the AHRQ supported Evidence-based Practice Center constitute an important component of the Effective Health Care Program. While UAB has had extensive CER and HSOER experience in leading National Guidelines and Quality Indicator development (Saag K, Curtis, Beukelman, Singh), along with faculty leading Cochrane reviews (Singh), the opportunity to develop collaborations with the Vanderbilt EPC affords trainees with a unique regional training opportunity and expands existing collaborative ties between the Vanderbilt DeCIDE/T32 and the UAB CERTs/T32/K12. The trainee will participate in different aspects of the systematic review as an investigator on the team. He or she will attend biweekly team meetings throughout the process, and will spend six weeks in-residence working on the final report. Trainees will take responsibility for development of summary tables and synthesis and writing of at least one distinct section of the report (e.g., results for a key question that is particularly appropriate for that trainee's career/area of expertise). The trainee will work with the senior members of the team to integrate the sections of the overall report, and then to develop at least one manuscript from the project. Research studies that the trainee could participate in for the rotation will depend on the current charge to the Vanderbilt EPC at the time of rotation.

6. The Centers for Disease Control Division of Diabetes Translation (DDT)

The Division of Diabetes Translation (DDT) is a part of the National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services (DHHS). The Division of Diabetes Translation's (DDT) goal is to reduce the burden of diabetes in the United States. The division works to achieve this goal by combining support for public health-oriented diabetes prevention and control programs (DPCPs) and translating diabetes research findings into widespread clinical and public health practice.

The division has about 100 employees in Atlanta, Georgia, with expertise on surveillance, epidemiology, statistics, economics, and evaluation. DDT's applied or "translation" research, takes information from clinical trials and incorporates clinical and public health practices. We analyze national surveys (e.g., NHANES, NHIS, NNHS, BRFSS). The National Health and Nutrition Examination Survey (NHANES) is a program of studies designed to assess the health and nutritional status of adults and children in the United States. The survey is unique in that it combines interviews and physical examinations. The National Health Interview Survey (NHIS) has monitored the health of the nation since 1957. NHIS data on a broad range of health topics are collected through personal household interviews. For over 50 years, the U.S. Census Bureau has been the data collection agent for the National Health Interview Survey. Survey results have been instrumental in providing

data to track health status, health care access, and progress toward achieving national health care objectives. The National Health Care Surveys are designed to answer key questions of interest to health care policy makers, public health professionals, and researchers. These can include the factors that influence the use of health care resources, the quality of health care, including safety, and disparities in health care services provided to population subgroups in the United States. These surveys include the National Ambulatory Medical Care Survey, National Hospital Ambulatory Medical Care Survey, National Hospital Discharge Survey, National Nursing Home Survey, and the National Home and Hospice Care Survey. The Behavioral Risk Factor Surveillance Survey (BRFSS) is a state-based, random-digit-dialed telephone survey, which can produce local, state, and national estimates on important health-related information on socio-demography, chronic illness, health behaviors, and access to healthcare.

Rotation Supervisor: Gloria Beckles, MD, MSc

Rotation Description: *Learning Objectives: 1) Learn methodologies to assess health, economic burdens and health related quality of life; 2) Design a study to evaluate the impact of health policies related to illnesses and risk factors; 3) Analyze large national survey data sets using appropriate methodology; 4) Develop a manuscript draft.* National survey data are an important asset for HSOER. The CDC/ rotation will provide the trainee with practical experience with the National Health and Nutrition Examination Survey (NHANES), the Behavioral Risk Factor Surveillance Survey (BRFSS) and other national surveys. This rotation will provide the trainee with experience in developing an innovative HSOER study using national survey data. For example, NHANES is a national representative repeated survey of samples of the US non-institutionalized civilian population that has obtained interview data on socio-demographics, medical and family information and had a full medical examination. BRFSS is a state-based, random-digit-dialed telephone survey, which produces local, state, and national estimates on important health-related information on socio-demography, chronic illness, health behaviors, and access to health care. The trainee will have a primary mentor and will have access to such major national survey data. He/she will attend weekly meetings to become familiar with ongoing research projects and to develop a collaborative relationship with other scientists and staff. The trainee will select a topic of interest, and then develop a HSOER study proposal over the 2-3 months. He/she will receive hands-on experience with the health services research methods and statistical analysis using SAS/SUDDAN or STATA. A manuscript draft is expected during the end of his/her training.

7. Center for Health Research of Kaiser Permanente Georgia (KPG)

Kaiser Permanente Georgia (KPG) is one of eight Regions of the Kaiser Permanente Medical Care Program, a federally qualified, prepaid group health maintenance organization and the largest non-governmental health care provider in the world. KPG first enrolled members in 1985 and currently provides comprehensive medical care services to approximately 275,000 members in the metropolitan Atlanta area. The enrolled population represents the demographic and socioeconomic population of the Atlanta area.

The Center for Health Research/Northwest, Hawaii, and Southeast (TCHR), a division of Kaiser Permanente, is a professionally independent, non-profit research institute established in 1964. Its mission is to improve individual health and inform health policy. In 1999, TCHR expanded its research operations to Kaiser Permanente Hawaii; and, in 2006, TCHR expanded research operations to include the research program at KPG. TCHR/Southeast (TCHR/SE) occupies over 5,000 square feet at KPG's administrative offices and maintains clinical recruitment offices at the Crescent Centre and Cumberland medical offices. All staff have computer workstations with standard office software; analytic staff have SAS, Stata, and other analytic software to support data management and statistical software. Authorized clinical and analytic staff have access to KPG's extensive data resources and electronic medical record system. TCHR/SE investigators collaborate with local universities in mentoring of MPH students and clinical pharmacy residents.

Most KPG administrative and clinical databases are point of service systems that control health plan and medical group operations (e.g., medical records, medical contacts, pharmacy services, hospital admissions and discharges, billing, and documenting quality of care for regulatory purposes). TCHR/SE analysts and

programmers are familiar with procedures for extracting records and variables from legacy system databases. TCHR/SE supplements legacy systems with a variety of analytic databases to support research, including geocoding for area-based measures and development of condition-specific datasets (e.g. tumor database, enrollees with diabetes, chronic kidney disease, cardiovascular disease, HIV). The KP electronic medical record (EMR), HealthConnect™, is built on the EpicCare EMR system. The EpicCare EMR system is CCHIT-certified, indicating that it has met a comprehensive set of ANSI HITSP standards for functionality, interoperability, and security (www.cchit.org). This EMR provides direct, immediate, and easily accessible information on patients' medical histories, biometric data, procedures, diagnostic findings, and treatments. HealthConnect includes a sophisticated graphical user interface with point-and-click functions, drop-down menus, auto coding, "smart sets" that permit physicians to order sequential testing strategies from the laboratory with a single click, and embedded practice guidelines.

KP's extensive data resources support a number of critical research functions: identifying participants for clinical trials, selecting samples for survey or interview, and conducting retrospective observational analyses using a variety of cross-sectional and longitudinal designs. The ability to link enrollees with providers and with facilities supports designs for comparative effectiveness (CE) of health care delivery systems, including the relationship between insurance benefit designs and patients' use of medical services and quality of care. The ability to identify individual-level race and to define area-based measures of socioeconomic status supports studies of gender and racial/ethnic disparities. The ability to reliably identify enrollees with a specific condition and to link them with rates of receipt of condition-specific therapies (e.g. medications, diagnostic services, surgical procedures) allows investigation of disease-specific CE issues identified in the IOM report from a population-based perspective.

KPG is a member of various research consortia of HMOs throughout the United States, including the: HMO Cancer Research Network (NCI), Cancer Communication Research Center (NCI), Cardiovascular Research Network (NHLBI), HMO Center for Education and Research on Therapeutics (CERTs), and the FDA Sentinel Event Initiative. In addition, KPG is a member of KP's national Comparative Effectiveness and Safety Research program, which is a 3-year program to support investigations of the use of KP's extensive data resources on questions of comparative effectiveness. Through regular conference calls and annual meetings, participation in these networks affords KPG investigators numerous opportunities to identify research areas of mutual interest and to develop proposals for funding of research projects.

Rotation Supervisor: Douglas Roblin, PhD

Rotation Description: *Learning Objectives:* 1) *Understand the strengths and limitations of managed care organization (MCO) data for conducting HSOER;* 2) *Understand and apply methods for correcting for selection effects inherent in MCO data;* 3) *Develop effective models for translating research findings into practice (evidence implementation research).* Kaiser Permanente Georgia (KPG) is a mixed-model MCO providing medical care to approximately 245,000 enrollees in the metropolitan Atlanta area. The diversity in KPG's health care organization and financing models and patient population provide a opportunities to learn how to conduct HSOER in an MCO. KPG has collaborated with the UAB CERTs on several projects including an ongoing NIH funded cluster randomized trial of osteoporosis evidence implementation (Saag K, Curtis). Trainees will be paired with a KPG investigator and programmer who will guide them through assessing the availability and relevance of KPG data for a HSOER question. Trainees will learn how to identify selection effects and how to apply matching and other methods to mitigate these effects. Embedded within a MCO is the opportunity to work with health care managers and providers and to facilitate implementation of research findings into practice change. Within KPG, there is a pro-active medical practice that is constantly seeking strategies to provide appropriate, effective care in an affordable manner. Examples of research studies the trainees could join for the rotation are: 1) Patient care differences in DHMO plans vs. HMPs; 2) Impact of a Multidisciplinary Care Clinic, based on a nurse navigator model, on care of cancer patients; 3) Impact on care of Internet portals that allow patients to view their medical records. Current HSOER T32 trainee David Buys, PhD and current CER T32 trainee Heather Sobko, PhD have active projects using KPG data that are a direct result of this short rotation.

8. The American Society of Health System's Pharmacists

The mission of the ASHP Foundation is to improve the health and well being of patients in hospitals and health systems through appropriate, safe and effective medication use. The Foundation provides leadership and conducts education and research activities that foster the coordination of interdisciplinary medication management leading to optimal patient outcomes. Emphasis is given to programs that will have a major impact on advancing pharmacy practice in hospitals and health systems, thereby improving public health. The ASHP Foundation's strategic priorities include: 1. Design and study of safe and effective medication-use systems; 2. Advancement of optimal patient medication outcomes; and 3. Expansion of pharmacists' direct patient care and leadership roles. The ASHP Foundation offers research grant, awards and educational programs. It also develops practice tools and hosts consensus conferences on critical topics related to medication-use in hospitals and health systems. The ASHP Foundation is co-located with its sister organization, ASHP.

ASHP is the 35,000-member national professional association that represents pharmacists who practice in hospitals, health maintenance organizations, long-term care facilities, home care, and other components of health care systems. For more than 60 years, ASHP has helped pharmacists in hospitals and health systems improve medication use and enhance patient safety. ASHP, which has a long history of medication error prevention efforts, believes that the mission of pharmacists is to help people make the best use of medicines. Assisting pharmacists in fulfilling this mission is ASHP's primary objective. The Society has extensive publishing and educational programs designed to help members improve their professional practice, and it is the national accrediting organization for pharmacy residency and pharmacy technician training programs.

The ASHP Foundation has complete access to ASHP' highly-automated working environment which utilizes approximately 84 servers running Windows 2003/08: these servers are both physical and virtual machines running within VMWare ESX hosted environment. These servers support centralized processing, distributed desktop workstations, and a secure external internet connection. ASHP provides internet-based services using both public and private external connections. Remote access is available to ASHP staff in 2 ways: Citrix Remote Desktop Services and/or Cisco Virtual Private Network. ASHP maintains a multi-tiered security for network accounts, host systems, services and data resources. ASHP is equipped to collaborate with research and corporate entities using a variety of means, both secure and public. ASHP can transmit and receive data in standard formats and media. ASHP maintains a robust Personify membership database that contains demographic and professional information for its 35,000 members. ASHP and the ASHP Foundation have subscriptions to GoToMeeting and Qualtrics

The ASHP Foundation is co-located with the American Society of Health-System Pharmacists at its national headquarters which occupies approximately fifty-two thousand square feet of office space located in Bethesda, Maryland. The facilities consist of offices and workstations for professional and administrative professional, computer facilities, library and conference rooms. Adequate conference room support is available for all meetings planned for the PACER Program.

The ASHP Library is a resource to all staff, including ASHP Foundation staff that provides access to over 100 periodicals and about 1,000 books within the health and medical field. The library has online subscriptions to half of the periodicals it owns and access to online tools such as the Cochrane database, DrugDex, and IDIS. A full-time librarian is employed and the ASHP library has access to the collection at the National Library of Medicine which is within 2 miles of the ASHP offices.

Rotation Supervisor: Daniel Coubaugh, PharmD

Rotation Description: *Learning Objectives: 1) Design educational programs to communicate HSOER-relevant information in ways aligned with their readiness to adopt them; 2) Conduct needs assessments of members of ASHP's Clinical Specialists and Scientists, New Practitioners and Practice Managers sections; 3) Develop a HSOER-related review.* ASHP is an active partner in the UAB CERTs. The American Hospital Formulary

Service Drug Information (AHFS DI®) is the only remaining federally designated drug compendium. Under CMS regulations, AHFS DI establishes medically accepted uses of drugs. Through numerous electronic applications, AHFS DI reaches a multitude of stakeholders, including individual clinicians, hospitals and health systems, payers, policymakers, and medical librarians. Trainees will receive one-on-one exposure to the processes used for development of drug information monographs for inclusion in AHFS DI®. The trainee will work with Dr. Cobaugh to include HSOER aspects to the education program in the ASHP Summer and Midyear Clinical Meetings. Trainees may develop measures to evaluate program effectiveness such as participation rates, pre/posttest knowledge, and participant satisfaction ratings. Trainees also will work with ASHP investigators and the editorial staff of the *American Journal of Health-System Pharmacy* to pursue publication of HSOER Reviews. A general review of CER and the AHRQ Effective Health Care Program by Schumock was published in July 2009 accompanied by an editorial by Cobaugh and Allison. Data from the needs assessment will be used to identify topics and ASHP members will be queried to identify authors. During the educational experience, Trainees will also receive one-on-one exposure to the processes used for development of drug information monographs for inclusion in AHFS DI®.

9. University of Massachusetts Medical School Department of Quantitative Sciences

University of Massachusetts Medical School (UMMS) has made significant investments to support translational and outcomes research growth. UMMS is in the midst of a \$21M project to build a state of the art data center on the South Street campus, which will be available for use in March 2010. Information Services currently hosts 600+ physical servers and over 400Tb of disk capacity in the current 3000 square foot data center. Over 180 applications and services are currently supported for the Medical School. UMMS also hosts applications for the UMass Boston and Lowell campuses, ERP applications for the UMass system and business applications for Commonwealth Medicine. The new data center provides 7000 square feet of white space and 11500 square feet of support spaces. The new environment has redundant primary power and network feeds and N+1 configurations for emergency generators, air handling units, chillers and cooling towers. The environment will be heavily virtualized. The goal of a virtual server is to run at 70+% capacity (versus 10-30% typical of dedicated hardware) while improving time to delivery, fault tolerance, business continuity and security. The UMMS Department of Quantitative Health Sciences, for which Dr. Jeroan Allison is Vice Chair, occupies the 7th floor of the new Advanced Center for Clinical Education and Science.

UMass Medical School's computer network has extensive mainframe and microcomputer facilities and capacities. Each of these is equipped with a high-speed personal computer using shared storage on the UMMS network where it is backed up daily. Drives where research data are stored are password protected and isolated from other components of the network. The UMMS network follows the Internet Engineering Task Force conventions. Each personal computer is directly linked to the internet and has e-mail access with the capacity to handle large dataset attachments. Personal computers used by the data analysts and statisticians are capable of analyzing extremely large datasets; these staff also have access to workstations and direct use of mainframe computers when needed. Through the UMMS library system all personal computers have access to PubMed, Ovid, and a large array of on-line journals.

Also, UMass has joined the REDCap Consortium (<http://project-redcap.org>) and has implemented two secure web-based applications (REDCap and REDCap Survey) to support electronic data capture for research studies. REDCap is a secure, web-based application for building and managing online databases. Using REDCap's stream-lined process for rapidly developing databases, one may create and design databases using 1) the online method from your web browser using the Online Form Editor; and/or 2) the offline method by constructing a "data dictionary" template file in Microsoft Excel, which can be later uploaded into REDCap. REDCap provides automated export procedures for seamless data downloads to Excel and common statistical packages (SPSS, SAS, Stata, R), as well as a built-in project calendar, a scheduling module, ad hoc reporting tools, and advanced features, such as branching logic, file uploading, and calculated fields.

Rotation Supervisor: John Ware Jr. PhD

Rotation Description: *Learning Objectives: 1) obtain advanced skills in risk adjustment; 2) apply risk adjustment methods to statistical models; 3) obtain experience in patient reported outcomes measurement using of IRT and CAT.* In collaboration with our external advisory committee member and close collaborator Jeroan Allison MD, MS, we have developed a 3 month rotation at the University of Massachusetts. Trainees will have an opportunity to work with John Ware, the developer of the SF-36, and to develop skills with item response theory (IRT) and computer adaptive testing (CAT). Through this two to three-month rotation, fellows will obtain cutting-edge skills in risk adjustment, an important cornerstone of CER and PCOR. Trainees will be assigned to current projects with the John Ware Group and will prepare a manuscript draft.

10. University of California at San Francisco (UCSF) Research Center for Symptom Management

The Research Center for Symptom Management (RCSM) goal is to advance the knowledge in the field of symptom management. Through that they aim to improve health care delivery and symptom outcomes for individuals. RCSM faculty work from a understanding that symptoms are the most common reason people seek health care and that symptoms are a major problem for individuals and their families since their management and resulting outcomes impact their daily activities and responsibilities. At the same time, health care providers and health care organizations have difficulty developing symptom management strategies that can be applied in various settings including acute care, ambulatory care, and home care because there are few tested models of symptom management.

To address these issues, the RCSM aims to 1) develop the subdiscipline of symptom management across health science disciplines and across health care settings by elucidating and testing a Model of Symptom Management; 2) improve individuals' health status, by decreasing symptom morbidity and thereby enhance their quality of life, with particular emphasis on specific cultural and ethnic groups; 3) prepare scientists in Nursing and other disciplines by interdisciplinary training in the area of symptom management; and 4) create mechanisms for synergy, cooperation, and collaboration among interdisciplinary clinical investigators working in the area of symptom management.

Rotation Supervisor: Christine Ritchie, MD, MSPH, FACP

Rotation Description: *Learning Objectives: 1) obtain advanced psychometric and analytic skills in symptom assessment 2) Use these skills to develop or adapt an existing scale or tool for independent research project.* In partnership with the rotation supervisor, this rotation will be tailored to individual trainee goals. Since many UCSF and RCSM faculty have overlapping projects, trainees have opportunities to work with different research teams from a variety of disciplines. In general, the RCSM focuses on symptom experience, intervention strategies, and outcomes related to pain, dyspnea, or fatigue and sleep disturbance. Symptom clusters and mental health symptoms are also addressed. Emphasis is placed on dimensions of the symptom, biological and genetic markers, qualitative and quantitative methods, and designing studies using therapeutic strategies to improve outcomes. Outcomes can include reduced symptoms, improved quality of life, and economic cost savings. Trainees have the opportunity to pursue research training with faculty throughout UCSF. The University and the diverse populations of the San Francisco area offer unique opportunities for the pursuit of research with minority populations. C. Ritchie is a former UAB faculty mentor that still actively mentors UAB junior investigators including PCOR K12 Scholar Jessica Merlin, MD, who will be completing this rotation as part of her PCOR training.