**RESOURCES**

The following describes some of the resources available to researchers at the VA Ann Arbor Healthcare System and can be used to complete the Resources document for grant submissions.

**Overview**

The VA Ann Arbor Research Service is affiliated with the world-class research university, the University of Michigan. The VA Ann Arbor Research Service has a forty – seven thousand square foot dedicated research facility and over 150 research investigators with approximately 400 open studies at any time. The VAAAHS Research Service encourages and supports research investigations that have the potential to impact on the health and well-being of our nations Veterans.

The Research Service is part of the Ann Arbor Healthcare System (VAAAAHS), a 109 acute-care bed facility that served over six-five thousand Veterans in fiscal year 2014, drawing from residents of Michigan and Northern Ohio. VAAAHS had 5,529 inpatient stays and 580,200 outpatient visits in fiscal year 2014. VAAAHS servers as a major tertiary care referral center, and provides care through the Community-based Outpatient Clinics in Toledo, Ohio, Jackson, and Flint as well as the main facility in Ann Arbor, Michigan.

VAAAHS is one of eleven VA medical facilities to have implemented SCAN-ECHO, Specialty Care Access Network-Extension for Community Healthcare Outcomes – a telehealth program, and recently became 1 of only 6 VA across the country to perform Trans catheter Aortic Valve Replacement (TAVR) procedure.

**Animal Care and Use Program**

The VA Ann Arbor Healthcare System Veterinary Medical Unit maintains OLAW assurance, and follows standards presented in The Guide, PHS Policy, Animal Welfare act regulations, and is further overseen by the VA Animal Care and Use Program (ACUP) of the VA Office of Research Oversite. The VA Ann Arbor Healthcare System contracts with the University of Michigan Unit for Laboratory Animal Medicine (ULAM) to provide veterinary care and rodent health services. A memorandum of understanding is place to describe the collaborative nature of the relationship between the two programs.

The VMU is staffed by a Supervisor, and 3.0 animal care technicians. The Animal Use and Care Program is oversee by the VA Research and Development Committee and the Subcommittee on Animal Studies.

The facility supporting animal research has approximately 13,000 square foot assigned in total. The facilities are secured and monitored 24/7, including for temperature and humidity as well as limiting physical entry to only authorized personnel. This monitoring is completed though the use of the Edstrom Environmental Watchdog System. The Research facilities have a secured entrance, and a second authorization is required to access the VMU.

The program is served by the facility Occupational Health and Safety Program, and provides all required training for researchers and staff engaged in the use and care of animals in the conduct of research.

**Imaging Capabilities**

The VAAAHS Research Service purchased a Digital Radiograpy System in 2014, the Faxitron UltraFocus 60. It is a core resource available to any animal researcher, and can facilitate rapid small animal diagnostics. Currently utilized primarily for viewing cancer lesions, the system can also facilitate phenotyping and enable research for other musculoskeletal imaging needs such as skeletal fractures, arthritis, osteoporosis, and osteomyelitis. The system is housed in the VMU.

**Laboratory Resources**

The VAAAHS Research Service has a forty-seven thousand square foot research facility available for researchers to conduct their bench research. The facilities are secured with key-card access, granted only to individuals credentialed to be conducting research work in the facility, or for individuals whose job duties require regular access to the secured facilities and completion of appropriate training to be in the facility, such as select maintenance workers. The facility is maintained by the VAAAHS facilities department, and has recently had upgrades including a new cold room, mechanical systems, new lighting through-out, and upgraded laboratory space in building 22.

The Research Service supports the generally required laboratory equipment and supplies, such as autoclave, glass washer, centrifuge, cold rooms, tissue culture hoods, and dry ice and liquid nitrogen are provided and maintained. Common rooms for purchased refrigerators and/or freezers are available as needed.

The service recently purchased a Live Cell Microscopy and Analysis System, housed in building 22, which can provide high-resolution quantitative data from live cells and tissues over long term 4D imaging, multi-channel spectral un-mixing, fast imaging, calibrated ratio imaging with highly stable and reliable fluorescence, FRET imaging, and advanced live or fixed cell imaging of dim signals. This system is available to any VA researcher and maintained by the Research Service. It was purchased in late 2013.

**Clinical Resources**

In 2016, a new Clinical Research Clinic will open in building 28 of the VAAAHS. This will provide close to 3000 sqft of renovated space, including 4 exam rooms, an additional 2 interview rooms for private interactions, an observation suite, a small laboratory with short-term storage for samples, centrifuge, microscope, and blood draw station. The new space will also provide work space for up to 30 clinical research staff, including several hoteling stations for staff who work offsite but have duties requiring them to be onsite occasionally.

**Functional Magnetic Resonance Imaging (fMRI)**

VAAAHS has an on-site fMRI suite dedicated to research. (need content from Nita)

**Center for Clinical Management Research**

The Center for Clinical Management Research (CCMR) was established in the mid-1980s. The Center is affiliated with the University of Michigan (UM) and is comprised of over 40 MD and PhD core investigators with a wide range of backgrounds and skills who are funded by VA and other federal and non-federal sources. CCMR focuses on several research areas: (1) improving measurement, monitoring, and understanding of quality and efficiency for the VA patient population with its substantial disease burden, (2) examining alternative and innovative systems and strategies for efficiently improving quality and outcomes for common serious and chronic illnesses, and (3) developing and applying improved methodologies for informing policymakers regarding heterogeneity in the effectiveness and safety of proposed interventions and for assessing barriers to the implementation of high-priority care. There are five programs within CCMR focusing on: serious mental illness (Serious Mental Illness Treatment Research and Evaluation Center – SMITREC), health care decisions (Center for Behavioral and Decision Sciences in Medicine), patient safety (VA/UM Patient Safety Program), quality improvement (VA/UM Program on Quality Improvement for Complex Chronic Conditions), and diabetes (QUERI – Diabetes Mellitus).

# Computer Resources

The computer support available at CCMR is extensive. We have 140 desktop PCs for investigators and project staff. We maintain a file server connected to a storage area network (SAN) with 20 terabytes (TB) of storage. We also maintain a SAS application server with a 48 user site license. We have a new STATA-MP 64bit application server with 48GB of memory and 12TB of additional storage with a 24 user site license. This server has 8 processors and takes advantage of the multiple processor routines embedded in STATA-MP. Our SAS server has also been upgraded to a similar 64bit server and 64bit SAS.

Present statistical software available includes STATA and SAS, and ACCESS for database management. Network connections are available to all medical departments at the University of Michigan. Access to the VA Patient Treatment File is available through linkages with Austin, Texas. Staff members have extensive experience with using these centralized databases. HSR&D employees have full access to a 13 server Citrix farm at the VA Hospital. Through use of this Citrix farm and/or Microsoft desktop services they are able to access all of the above equipment and software over the VA network and from outside the VA using secure encrypted VPN accounts.

In terms of data security, when using our computing resources remotely or through the VPN all data and processing resides on the VA servers. Using thin client technology (Citrix/remote desktop) only a screenshot of the desktop is transmitted outside the VA. All servers and the SAN are backed up using a ML6020 tape library and have daily incremental back-ups along with full backups done weekly. Back-up tapes are stored off site at a secured facility and can be called back to the site if needed. All equipment is housed in the VA central server room with climate control, a dedicated UPS including a generator for use during power outages. The room is secured with card readers, and locked doors with limited access. Cameras and motion sensors are located within the room for additional security.

# Office Resources

Project personnel at the Ann Arbor VAMC will have sufficient office space and support, including administrative, computer, and library resources, to conduct this research project. Drs. Sales and Iwashyna have private offices in the CCMR suite. Dr. Miller has a private office at the Ann Arbor VAMC