

Strategic Research Plan and Progress Report

Introduction

The Kansas Health Science University (KHSU)-Kansas College of Osteopathic Medicine (KansasCOM) is committed to developing a robust research program to assure students gain the skills and expertise related to becoming forward-thinking, empathetic health care leaders who are dedicated to innovation, research, and finding collective solutions to advance underserved communities.

KHSU-KansasCOM Research Infrastructure and Department of Research

The first class matriculated in August 2022. Consistent with the plans submitted under the pre-accreditation status, KHSU-KansasCOM has developed a robust research infrastructure for students and faculty.

This infrastructure is housed under the umbrella of academic affairs and is centered in the Office of Research and Scholarly Activity, which is led by the Director of Research and Scholarly Activity. The team includes a medical director, an advanced-practice nurse practitioner with significant research and leadership experience, a research officer, a director of clinical and health outcomes research, professors, and a practice-based research network (PBRN).

Milestone Achievements 2021 - Fall 2022

During early 2021 through the start-up phase, a number of important milestones outlined in the pre-accreditation stage strategic research plan have been accomplished.

1. Several significant hires have been made, including:
 - a. [Director of Research and Scholarly Activity and Medical Director](#) for the PBRN
 - b. [Research Officer and IRB Chair](#)
 - c. [Director of Clinical and Health Outcomes Research](#)
 - d. [Executive Director for the PBRN](#)
 - e. Established COM faculty with research experience
 - f. Established COM faculty with biostats experience
2. Developed a research infrastructure including:
 - a. The purchase and implementation of [Pivot-RP](#), a software-as-service platform provided by ProQuest/Exlibris, provides access to global funding opportunities for researchers. All faculty have access to Pivot-RP.
 - The identification of grant resources for faculty and student research was one of the milestones set under the pre-accreditation self-study. [Pivot-RP](#) and [Cayuse: Sponsored Projects](#) (2c below) achieve this milestone.
 - b. The purchase and implementation of a license to [Cayuse: Human Ethics](#), a digital IRB protocol platform. This tool is available to all internal researchers as well as all researching members of the PBRN.
 - c. The purchase of a license to [Cayuse: Sponsored Projects](#), a digital platform that facilitates the smooth progression of research applications through the entire lifecycle, from

proposal through submission and post-award budget management. *Cayuse: Sponsored Projects* interfaces with *Pivot-RP*.

- d. The purchase and implementation of a license to the [CITI Program](#) (the Collaborative Institutional Training Initiative) to provide certification and training for all internal and affiliated researchers seeking KHSU-KansasCOM IRB approval. KHSU-KansasCOM requires all researchers (faculty, students, and staff) to undertake ongoing training in Human Subjects Research.
 - e. Successfully received a [SAM number](#) (System for Award Management) from the US Federal Government, enabling KHSU-KansasCOM to apply for federal awards for sponsored research.
 - f. Organized an IRB (Internal Review Board), which met in the first month of the first trimester of the first class admitted.
 - g. Successfully submitted and awarded a grant from a private foundation worth approximately \$575,000 for a sponsored project.
 - h. Received an [FWA number](#) (Federal-wide Assurance) by registering with the [US Office for Human Research Protections](#) (OHRP).
 - i. Successfully launched the Kansas Education and Research Network (KERN). This is a practice-based research network (PBRN) that is led by a medical director and an executive director.
 - Formed an advisory committee of healthcare providers from the Wichita region to provide guidance
 - The medical director is a DO and PhD
 - The executive director is an advanced-practice registered nurse (APRN) with research experience.
 - [Information about KERN is posted on its website.](#)
 - Currently recruiting healthcare providers across a multi-state region as KERN members.
3. Developed an Integrated Research Curriculum. Population Health and Evidence-Based Medicine account for 20% of the credits within the pre-clinical curriculum. Students have completed their first trimester of studies, including research methods.
- a. The curriculum's objectives include (but are not limited to):
 - Evaluate intelligence data and the medical literature as a corpus and as individual studies, drawing conclusions about medical practice.
 - Apply a working knowledge of research methodologies commonly used in biomedical research.
 - Participate in a research project, research presentation, and development of a research protocol.
 - b. The curriculum includes didactic activities in research methods, biostatistics, critical appraisal of medical literature, and evidence-based medicine. (These activities were listed as goals under the pre-accreditation phase.)
 - c. Elective rotations in medical research. These rotations have been built into the curriculum but not yet delivered since the COM matriculated its first class in August 2022.

Milestone Revision 2022 - 2023

The following items were included in the strategic research plan during the pre-accreditation phase. These have been eliminated from the current plan.

1. Development of a data management and analytics partner to facilitate community-based research and data analysis (<https://research.google/teams/health/>)
2. Rationale: The research team believes they have sufficient resources with technology, biostatistics, and research methods within their ranks to cover all necessary needs for the next two years.

Milestone Goals

In addition to the completed milestones above, the following items were included in the strategic plan during the pre-accreditation phase. These items are not yet completed but are in various states of development (the first class matriculated in August 2022).

1. Faculty development offerings in community-based research.
 - a. Status: In development
 - b. Faculty development was focused on teaching and learning, pedagogy, and assessment during the start-up phase.
 - c. Faculty development pertaining to community-based research now falls under the Office of Research and Scholarly Activity and KERN umbrella. As KERN research is conducted, the research will be shared with the internal and external stakeholders and include professional development.
2. The PBRN is to be registered with AHRQ ([https:// pbrn.ahrq.gov/pbrn-registry/register-your-network](https://pbrn.ahrq.gov/pbrn-registry/register-your-network))
 - a. Status: In progress
 - b. KHSU-KansasCOM has begun the process of registration.
 - c. Final registration requires 50% or more members from a primary care discipline.
 - d. KERN recruitment for primary care providers is ongoing.
3. Development of an Annual Research Forum, which will occur annually. Regional and national plenary speakers with expertise in the KHSU-KansasCOM research areas of interest will be invited to the Annual Research Forum. Faculty and students will have the opportunity to present their research at the Annual Research Forum through paper and poster presentations.
 - a. Status: In development.
 - b. This activity is anticipated to occur during the third trimester of year 1. Preparation for the Forum will be incorporated into the same course in which research methods and statistics are taught.
4. Development of a Research Resource Center
 - a. Research mentor group – listing of KHSU-KansasCOM faculty and regional researchers who agree to serve as research mentors for KHSU-KansasCOM students. This listing will be available to all students through the student portal of the KHSU-KansasCOM website.
 - Status: In development.
 - Research mentors were invited to visit with KHSU-KansasCOM students within the required Population Health and Evidence-Based Medicine course on 9/21/2022. Several interested students found matches with research mentors on that date.
 - b. Development of a medical monograph publishing center. This system will identify policies and procedures to review and post student and faculty manuscripts as a medical monograph on the KHSU-KansasCOM research website.
 - Status: In development.
 - KHSU-KansasCOM has identified a local printer who will publish materials authorized by the Office of Research and Scholarly Activities.

- One faculty member has a book in development to be published by the center.
 - Policies and procedures are in development.
- c. Printing and publishing support for faculty, students, and staff poster presentations (printing services, poster templates, publication peer review)
- Status: In development.
 - An additional FTE, part of the hiring plan, will be added as a Research Coordinator in the Office of Research and Scholarly Activity. This position will provide these additional services.

Research Financial Support

KHSU-KansasCOM is committed to research and scholarly activity. This is evidenced by the commitment of dollars to support faculty research, specialty software platforms, a designated Research Center, faculty office space, and personnel to assist students in research and peer review through publication or grant applications.

An additional \$100K in FY 23 and \$200K annually are budgeted to fund an intramural grant program, provide resources for the dissemination of scholarly work, provide statistical support, and support the KHSU-KansasCOM IRB and PBRN. KHSU-KansasCOM budgeted \$20K for a yearly statistical support service dedicated to research.

Additionally, resources allocated to faculty development are approximately \$60K annually. The costs associated with faculty development and program development are housed under the institution's operating budget.

Research Activities

KHSU-KansasCOM has developed and continues to invest and grow its research infrastructure. It supports research and scholarly activity among faculty, students, and community partners. As part of the integrated evidence-based medicine curriculum, all KHSU-KansasCOM students will be actively involved in KHSU-KansasCOM research. The Director of Research and Scholarly Activity is a member of the Dean's Executive Committee and the Curriculum Committee.

The Office of Research and Scholarly Activity is actively working on several actions and primary research opportunities and continuing to further develop scholarly activity and educational research activities for all KHSU-KansasCOM students during pre-clinical and clinical education.

Educational activities include, but are not limited to:

- Didactic lectures in research methods, biostatistics, critical appraisal of medical literature, and evidence-based medicine (noted earlier)
- Web-based research resources to promote research participation. KHSU-KansasCOM has a very robust digital library as well as [Pivot-RP](#), [Cayuse: Sponsored Projects](#), and the [CITI Program](#) (all detailed earlier).
- Elective rotations in medical research. These rotations have been built into the curriculum but not yet delivered since the COM matriculated its first class in August 2022.
- Literature reviews
- Protocol development
- Institutional Review Board activities (presenting a proposal and/or participating in a review)
- Data collection
- Dissemination of research findings (poster presentations, oral presentations, and/or publication)
- Collaborating with community healthcare partners to design and develop action research to improve the delivery of patient care in clinical settings

Research Agenda

The research agenda for KHSU-KansasCOM is centered on the [Institute for Healthcare Improvement \(IHI\) Quintuple Aim](#). The Quintuple Aim focuses on five domains:

- I. Population Health
- II. Experience of Care
- III. Per Capita Cost
- IV. Provider Wellness
- V. Advancement of Health Equity

Elements outlined in the Quintuple Aim are covered in the pre-clinical curriculum within the Population Health and Evidence-Based Medicine track, a two-year course of study that is mandatory for all students. The research agenda is accordingly focused on elements that address one or more of the foci of the Quintuple Aim.

Additionally, there is a matrix of priorities regarding general fields of study, including:

1. Educational Research
2. Translational Research
3. Osteopathic Research

Educational Research is the study of innovative educational models and processes that promote student knowledge and skills in improving patient access and outcomes. KHSU-KansasCOM will evaluate several innovative educational strategies designed to develop student knowledge and skills that improve patient care and patient outcomes. Initial studies will focus on the use of technology in education and remote education. Specific research topics will include:

1. Aligning pre-clinical, clinical, and post-graduate education and training
2. Clinical simulation
3. Clinical presentation small group education including both common patient (acute illness, undifferentiated problem, chronic disease management, preventive care) and common population-based (care integration, inter-professional care, community health) health care issues
4. Educational Tracks
5. Virtual Reality
6. Artificial/Augmented Reality/Machine Learning
7. Telehealth and tele-education

Research will focus on evaluating these educational models and the following outcomes:

1. Student attitudes and beliefs
2. Residency selection
3. National board score performance
4. Clinical performance (preceptor evaluation)

Translational Research pertains to the study of the application of new technologies and processes to the delivery of health care, bringing emergent primary research to the bedside. KHSU-KansasCOM community-based clinical training will be undertaken in six Kansas regions: South Central, South Eastern, South Western, Central–West, West, and North-East Kansas. Each region will provide both ambulatory and hospital-based education for assigned students that will include care for pediatric, adult, and senior patients. Each region will include one or more clinical practices that provide care for underserved patients. These patients include those with geographic limitations to care (rural, home-bound, facility-bound), patients with unique healthcare needs (senior patients, patients with multiple chronic diseases), and those with economic limitations to care (under/uninsured). These practices will be recruited to

participate in the planned KHSU-KansasCOM Practice-Based Research Network (KHSU PBRN), which will be registered with AHRQ. The KHSU-KansasCOM PBRN will be charged with researching the following areas of interest:

1. Current barriers to care for underserved patient populations in each practice region
2. Current barriers to recruiting trained healthcare workers to provide care to local populations
3. Evaluation of innovative solutions for improving care delivery and patient outcomes (i.e., technology-based solutions, health care worker training, patient education).
4. Evaluation of the application of Osteopathic Practices and Principles to chronic disease management and health promotion.
5. Evaluation of inter-professional teams to improve access and patient outcomes (i.e., integrated behavioral health, community health workers, "hot spotters").

Osteopathic Research pertains to the study of the application of Osteopathic Principles and Practice to patient care. Osteopathic research will predominately be undertaken through the KHSU-KansasCOM PBRN, although individual physicians and practices may undertake small pilot research projects in anticipation of larger formal research projects. Osteopathic research protocols are being developed. The Executive Director of the PBRN has previously worked with William Simon, DO, in Wichita, Kansas, to undertake a pilot study in osteopathic manipulation. Topics to be considered for osteopathic research will include:

1. Evaluation of the application of Osteopathic Principles and Practice in chronic disease management and health promotion.
2. Evaluation of the application of Osteopathic Principles and Practice in patient satisfaction.
3. OMT/OPP clinical education.

It is important to note that as of this writing, the inaugural class has only been involved in a portion of their first term of study. Therefore, most students have not yet begun to engage in research, although some students began working in research areas within the first half of the first term.

A Sample Matrix

The research agenda, with sample research topics (many of which are in various stages of proposal development during the first trimester), is illustrated below. Some studies meet multiple domains in the matrix and thus are listed in more than one place.

Research Agenda Matrix, Sample Topics			
	Educational Research	Translational Research	Osteopathic Research
Population Health	Rural Medicine: Factors that influence student residency aspirations		
	Empathy changes over time among osteopathic medical students engaged in an integrated curriculum in population health	Normative ranges temporal bone window density for various adult populations	The effect of manual diaphragmatic release and thoracic pumping
	The effect of patient education efforts on pediatric immunization rates in a rural Kansas county	Normative ranges for measured pulse oximetry among diverse skin tones on normal controls	
Experience of Care	Provider Bias and the experience of care for morbidly obese patients		Myodural release and the management of chronic migraine pain
	Differences in likelihood to detect heart murmur among matched-pairs standardized patients by first-year osteopathic medical students using point-of-care ultrasound versus auscultation.	Medical/Hospital Culture and Effects on Providers and Patient Care	
	The effect of provider training regarding cultural differences on minority patients perceived likelihood to return to provider in Midwestern urban center	Factors that influence perceived healthcare quality among counties in Kansas	
Per Capita Cost		Economic Impacts of Proximity to Healthcare in Rural Kansas	The relationship between primary care access in rural Kansas and healthcare cost and hospitalization
		Medical/Hospital Culture and Effects on Providers and Patient Care	
		Rural-urban differences in financial burden among T1I Diabetes patients	

Provider Wellness		Medical/Hospital Culture and Effects on Providers and Patient Care	
	Availability of service relief and the effect on provider well-being		
			A comparison of perceived provider well-being among rural DO and MD providers in the rural west
Advancement of Health Equity		Neighborhood Correlates to Healthcare Outcomes in Wichita, KS	
		Factors that influence perceived healthcare quality among counties in Kansas	
	The effect of provider training regarding cultural differences on minority patients perceived likelihood to return to provider in Midwestern urban center		