

Contact: Rachel Boon

**REQUEST FOR NEW CENTER AT THE UNIVERSITY OF IOWA:
CENTER FOR ADVANCING MULTIMORBIDITY SCIENCE**

Action Requested: Consider approval of the request by the University of Iowa for a new Center for Advancing Multimorbidity Science.

The Council of Provosts and Board office support approval of this request.

Background:

Description of proposed center. The overall mission of the Center for Advancing Multimorbidity Science (CAMS) is to enhance interdisciplinary, biobehavioral research focused on complex multiple chronic conditions in human adult populations using state of the art data science and analytic techniques.

Advances in cancer and cardiothoracic treatment has resulted in a growing segment of the population who survive a life-threatening condition but are encumbered with multiple chronic conditions and/or symptom as a result of the permanent adverse effects of the curative treatment. For example, immunotherapy is increasing the life expectancy of many cancer patients but causes multiple downstream issues such as new onset diabetes. Moreover, once the advanced treatment is completed, these patients return back to their communities to be managed by primary care providers who are unprepared to deal with the magnitude and complexity of the survivorship sequelae. This is especially problematic among rural populations, which are prominent in Iowa. The establishment of this pioneering Center at the University of Iowa would provide the infrastructure to address a growing and burdening problem for rural Iowans and move the nation forward in addressing the critical needs of people living in survivorship.

The University of Iowa is well suited to have a center with this focus given the aging population in Iowa and the synergistic relationships with other centers and departments across campus that study and care for adults with complex multiple chronic conditions. The College of Nursing is the ideal place to house CAMS because its Nurse Practitioners (NPs), particularly those with dual certifications, routinely care for patients with complex multiple chronic conditions and related symptom profiles. CAMS will support research that provides evidence to support the care that these NPs provide and will allow the NPs to inform the research that is conducted. Additionally, the knowledge gained from these relationships will inform the instruction of students in all programs (undergraduate and graduate).

Need for proposed center. The increasing prevalence of multiple chronic conditions, coupled with escalating costs and poor health outcomes, is shifting clinical practice from a single-disease paradigm to one addressing multiple conditions and symptoms through precision health. Targeting preventive and therapeutic interventions toward those for whom they will work best will dramatically improve outcomes and decrease costs. CAMS will accelerate the realization of precision health by: a) broadening the conceptual model of multimorbidity science to include symptoms/ symptom clusters; b) training new investigators in multimorbidity science and advanced data science and analytics; c) mentoring new investigators from pilot projects through the established programs of research in multimorbidity and precision science d) leveraging resources and talent from within and outside the university.

Activities and objectives of proposed center. The specific purpose of CAMS is to provide the infrastructure and resources to new investigators and their collaborators for the integration of Multimorbidity Science and Symptom Science in order to characterize risk susceptibility and treatment responder profiles. This integration will allow clinicians and scientists to identify persons who are more likely to develop specific conditions/symptoms as well as those who may respond to customized therapies. The specific aims of CAMS are to:

- 1) Develop a sustainable interdisciplinary biobehavioral research capacity by establishing and coordinating an infrastructure and resources that facilitates the integration of Multimorbidity and Symptom Science through the development of patient risk and therapy responder profiles.
- 2) Build thematic science beginning with a reconceptualization of the science of Multiple Chronic Conditions (Multimorbidity) to include Symptom Science.
- 3) Enable research that will develop into new programs of science and independent investigator research applications.

Relationship to mission and strategic plan. The Center's goals align with both the College of Nursing and the University of Iowa strategic plans, indicating current and future institutional support. For example, a goal of the College of Nursing Strategic Plan includes strategies to "3.3. Cultivate interdisciplinary teams" and "3.4. Expand infrastructure to support faculty research and scholarly productivity for all faculty." Similarly, the UI Strategic Plan outlines critical tasks to "invest in research centers and infrastructures that make collaboration natural, sustainable, and seamless" and "create research partnerships with universities and institutes that complement our areas of strength." These priorities will facilitate the allocation of resources to ensure sustainability and expansion of the Center.

Relationship to other centers/institutes at the university. The Center has established relationships with the following centers/institutes at the University of Iowa.

A. Center for Evaluation and Assessment

Housed in the College of Education at the University of Iowa, the Center for Evaluation and Assessment (CEA) conducts multiple forms of program evaluation in collaboration with colleges, universities, and school systems throughout the United States. Dr. Hollingworth serves as the CEA Director and, along with CEA staff, developed and oversees the CAMS Evaluation Plan.

B. Institute for Clinical and Translational Science (ICTS):

A number of the College of Nursing and interdisciplinary faculty in CAMS are part of the ICTS, including Dr. McCarthy who is on the ICTS leadership group. Dr. Winokur, ICTS Director, is a CAMS Faculty member and serves on the CAMS University Leadership Committee for Center Sustainability. Members of the ICTS Biomedical Informatics Operations (Drs. Knosp, Davis, Schappert) are participating in the CAMS Integrative Analytics Core. Additionally, as CAMS promotes translational research in the training program, training opportunities offered by the ICTS (such as masters and PhD degrees in Clinical and Translational Science) have and will continue to be valuable to CAMS Associate Faculty.

C. Biostatistics, College of Public Health:

M. Bridget Zimmerman, PhD, the Director of this Consulting Center, is a collaborator on a number of College of Nursing grants and participates in this Center's training program. Full-time and student consultants work with investigators during all phases of health science research: proposal development, study design, data form or questionnaire development, data entry, data management, statistical analysis and report preparation. The Consulting Center is actively involved in research projects ranging from brief consultations to long-term collaborative research.

Dr. Zimmerman collaborates with a number of Nursing faculty (McCarthy, Rakel) and other faculty in the Center (Lutgendorf, Sluka) and is part of the Integrative Analytics Core.

D. Holden Comprehensive Cancer Center (HCCC):

The Comprehensive Cancer Center provides CAMS members with access to services and resources of core facilities integral to cancer and aging research. Dr. Weiner, Director of the Comprehensive Cancer Center, is an affiliate faculty of CAMS and facilitates use of HCCC resources by CAMS Faculty. He also serves on the CAMS University Leadership Committee for Center Sustainability and is facilitating development of the CON Processing Lab. The HCCC has provided pilot support for Gilbertson-White and Cherwin and the results of their research will provide HCCC with helpful insights into care of these patients.

E. In addition, CAMS has established relationships with other departments and colleges across the University, including but not limited to the following:

- Department of Pathology, College of Medicine
- Department of Obstetrics and Gynecology, College of Medicine
- Department of Psychiatry, College of Medicine
- Magnetic Resonance Research Facility, College of Medicine
- University of Iowa College of Nursing Pain and Associated Symptoms Training Program
- University of Iowa Center of Excellence in Pain Education (UI CoEPE)
- Iowa Institute of Human Genetics (IIHG)
- Department of Psychology, College of Liberal and Sciences
- Department of Computer Science, College of Liberal Arts and Sciences
- Department of Geographical and Spatial Information Systems, College of Liberal Arts and Sciences
- College of Engineering
- Department of Physical Therapy, College of Medicine
- Department of Epidemiology, College of Public Health
- Department of Business Analytics, College of Business

Relationship to centers/institutes at other universities in Iowa and potential for collaboration. No other university in Iowa has a similar research center. CAMS is part of a network of Centers funded by the National Institute of Nursing Research (NINR) to advance the science of healthcare to direct the care of patients with complex multiple chronic conditions. CAMS is one of three funded Centers across the country with this unique focus.

Resources, facilities and equipment required. Commitment and resources have been received from the College of Nursing. Additionally, colleagues from across the University have been identified who are pleased to offer support to the Center in the areas of evaluation, biological testing and analytic expertise. Central administration has pledged support to the College for continued excellence and growth.

Sue Gardner, PhD, RN, FAAN and Barbara Rakel, PhD, RN, FAAN, serve as Co-Directors.

Liz Hollingworth, PhD, Director of the Center for Evaluation and Assessment at the University of Iowa, leads the internal evaluation of the Center and supervises a part-time research assistant to collect all of the evaluation measures and summarize them for meetings of the Internal Executive Committee.

Jennie Embree, MS, is the Center Coordinator assists the Directors in managing the daily affairs of the Center, coordinates all meetings, retreats and workshops of the Center, and coordinates Pilot Grant reviews.

Linda Liu Hand, PhD, Director of the Office for Nursing Research and Scholarship, leads the Business Team in the Administrative Core and serves as the Business Official for the Center.

D. Dianne Rash, BBA, Budget Specialist for the Office for Nursing Research and Scholarship, serves as the budget specialist for the Center.

Janet Williams, PhD, RN, serves as Director of the Enrichment Program with Sandra Daack-Hirsch, PhD, RN, as Co-Director.

Keela Herr, PhD, AGSF, FGSA, FAAN, Associate Dean for Faculty and Co-PI of the NINR funded T32 on *Pain and Associated Symptoms: Nurse Research Training* (NINR 2T32NR011147-06A1) directs the Pilot Administrative Core.

Nick Street, PhD, Henry B. Tippie Research Professor of Business Analytics and Associate Dean for Research and PhD Programs is Director of the CAMS Integrative Analytics Core with Boyd Knosp, MS, Associate Director for Biomedical Informatics Operations in the University of Iowa ICTS, as Co-Director.

The College of Nursing made the following commitments to support CAMS:

- A. The dedication of one floor of the College for a 6,100-square foot research suite that contains research offices and space for conducting research. The College provides office space within this Research Suite for principal investigators awarded Center Pilot Grants and their research teams.
- B. The College is committing \$40,000 to support the development of a biospecimen Processing Lab to be housed within the College of Nursing's existing research suite, and a biospecimen repository. A lab where specimens are obtained and processed within the College prior to sending them to a lab for analysis will provide researchers with a cost-effective approach for their research.
- C. Space provided for pilot projects and individual staff offices.

These facilities, along with collaborations established by individual research teams, provides all those needed to establish and maintain CAMS. If other facilities are needed, these will be included in the P30 application or other external applications for future funding.

Beyond the biospecimen processing lab described above, the Carver College of Medicine and the University of Iowa have made major investments in core facilities that provide equipment required to establish and maintain CAMS. These facilities are centrally located and run by a faculty director with an advisory committee and a cohort of technical staff whose services are available on a fee-for-service basis. Services are available at substantially reduced cost due to the strong financial support from the College of Medicine.

Expected funding sources. CAMS has been in existence for one year and is funded to continue for another four years.

National Institute of Nursing Research funds

- \$ 356,027/year

The UI College of Nursing funds

- \$75,013/year

P30 funding will be sought to continue the work of CAMS for an additional five years. This funding will focus on medium-sized developmental research projects organized around the same shared resources, research infrastructure and highly collaborative, interdisciplinary research environment. Individual projects will develop into independently funded research projects to support the College of Nursing and University of Iowa.

Other funding will be sought to further support CAMS sustainability. Possible sources of additional funding include NIH, Department of Defense, Wellmark, United Health Care Group, Iowa Cancer Consortium, etc.

Evaluation plan. CAMS has a multi-layered evaluation process that includes internal oversight, an in-depth evaluation plan carried out by the University of Iowa Center for Evaluation and Assessment and inclusion of an external Evaluation Consultant as a member of the External Advisory Committee. Yearly goals and evaluation metrics have been developed and are reviewed through quarterly data reports. Any issues or adjustments required to support the Center aims are identified and made each quarter and annual data reports are submitted to National Institutes of Health for review.

Date of implementation. Upon approval by the Board of Regents.

Letters of Support



College of Nursing

Dean's Office
University of Iowa
50 Newton Road
Iowa City, Iowa 52242-1121
319-335-7018

September 28, 2020

Kevin Kregel, PhD
Interim Executive Vice President and Provost
111 Jessup Hall

Dear Dr. Kregel:

I am pleased to submit for your consideration our application to the Board of Regents to establish a new Center for Advancing Multimorbidity Science in the College of Nursing.

The Center for Advancing Multimorbidity Science was created in 2018 after receiving a five-year, \$1.9 million grant from the National Institute of Nursing Research (NINR) at the National Institutes of Health (NIH) to become an Exploratory Center of Excellence. This was one of three centers funded and charged with building research infrastructure and centralized resources to catalyze new interdisciplinary, biobehavioral research teams to tackle the challenges of conducting research on human adults with multiple complex chronic conditions.

The increasing prevalence of multiple chronic conditions (MCC), coupled with escalating costs and poor health outcomes, is shifting clinical practice from a single-disease paradigm to one addressing multiple conditions and symptoms. Targeting preventive and therapeutic interventions toward those for whom they will work best will dramatically improve outcomes and decrease costs. CAMS is led by Sue Gardner, PhD, RN and Barbara Rakel, PhD, RN and is currently supporting five exciting pilot research projects related to MCC and led by promising junior faculty in the College of Nursing. These projects include:

- Stephanie Gilbertson-White, PhD, RN, Associate Professor: Evaluating Symptom Variability in Multimorbidity and Advanced Cancer
- Catherine Cherwin, PhD, RN, Assistant Professor: Gastrointestinal microbiome, obesity, and chemotherapy: Influences on symptom burden in women with breast cancer receiving chemotherapy
- Anna Krupp, PhD, RN, Assistant Professor: Functional Decline and Symptom Experience Among Patients with Sepsis
- Julie Vignato, PhD, RN, RNC-LRN, CNE, Assistant Professor: The Effects of Immunovascular Biomechanisms of Arginine Vasopression (AVP) Hypersecretion in Preeclampsia (PreE) Prediction
- Nai-Ching Chi, PhD, RN, Assistant Professor: Multimorbidity in Patients with Alzheimer's Disease and Association with Pain and Health Care Utilization: A Big Data Approach

In addition, CAMS is planning to solicit applications to fund at least two more pilot projects over the next two years. CAMS actively supports these pilot projects by providing the investigators with funding and mentoring, so they may ultimately develop successful independent applications for R-level funding. It is also important to note that all these pilot projects are collaborative endeavors across the University. The research teams include individuals from the Carver College of Medicine, the Tippie College of Business, and the College of Liberal Arts and Sciences. The

Center also has members from other colleges at the University of Iowa, including the College of Dentistry, the College of Engineering, and the College of Public Health as well as members from eleven other institutions across the country.

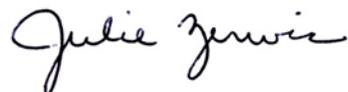
In addition to collaborations across the University for pilot projects, we also have strong collaborations with other centers at the University of Iowa, including the Center for Evaluation and Assessment, the Institute for Clinical and Translational Science, the Biostatistics Consulting Center, and the Holden Comprehensive Cancer Center.

CAMS also has a robust enrichment program that provides opportunities for Center members to receive valuable guidance for solving problems encountered in building a successful academic career and skillset, building scientific writing skills, and preparing and submitting successful funding applications. The enrichment program also offers instruction on advanced data analytics, statistics, measurement and research design and data sharing. Enrichment offerings promote knowledge of the interdisciplinary engagement in development of Precision Health, facilitate collaborative relationships, present content on issues related to developing/adapting guidelines for patients with multimorbidity, and bring the scientific progress of pilot and other Center supported studies to the attention of other investigators who have the potential to contribute to Center research initiatives.

The College of Nursing has enthusiastically allocated resources to support CAMS, and is committed to continuing to do so, because the goals of CAMS align so nicely with the College of Nursing's strategic plan to cultivate interdisciplinary teams and expand infrastructure to support faculty research and scholarly productivity for all faculty. I also see the Center as an important contribution by the College of Nursing toward meeting the University's goal of performing high-impact research. I am confident that recognition of CAMS by the Board of Regents will also help leverage additional funding for expansion and long-term sustainability.

Please review the attached completed application (Form C – Request to Establish a Center or Institute) for specific details about the proposed center. If you would like additional information, please let me know and I will work with Drs. Gardner and Rakel to provide it. I look forward to collaborating with you to advance this application to the Board of Regents for their approval.

Sincerely,



Julie Zerwic, PhD, RN, FAHA, FAAN
Kelting Dean and Professor