SCHOOL OF NURSING
UNIVERSITY OF MICHIGAN

2017-18

The State of Research at U-M School of Nursing

MESSAGE FROM JANEAN HOLDEN PH.D., RN, FAAN

The University of Michigan School of Nursing (UMSN) research program is on the move! Since 2014, we have quintupled our research allocation funding dollars to $13.6 million and our total research funding is at $49 million. That's an increase of $2 million compared to last year. In the past year we have submitted 182 grants, including 106 federal grants, 42 internal grants, and 16 foundation grants. Of these, we directly submitted 50 R-Series grants, and have co-investigator or co-principal investigator effort on an additional 19 submitted R-Series grants. The NIH represents about 58% of our current research allocations. Our funding rate for federal grants is 31% and for non-federal grants is 36%. These are excellent numbers given the extremely competitive nature of funding.

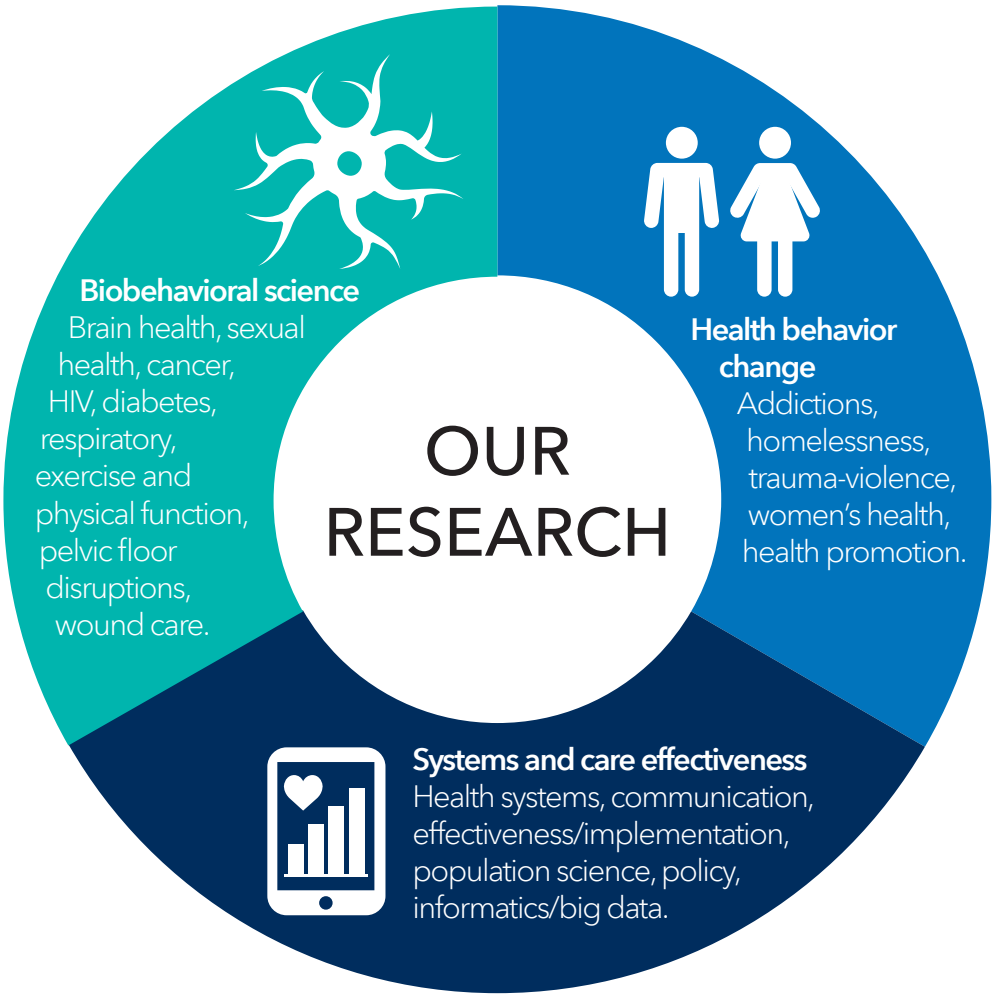
As always, we acknowledge our donors. We have been able to fund a number of pilot studies from gift accounts that have allowed faculty to submit stronger data-supported external grants, thanks to the generosity of our donors.

This increase in grant funding, coupled with the impact of the work our scientists do, makes a very real difference in patient care. Our studies impact a variety of health care issues including cancer, HIV, reproductive health, diabetes, pain, homelessness, underserved and vulnerable populations, communication among health care providers, hospital safety, hearing loss, addiction behaviors, human trafficking, opioid abuse, and alternative health care strategies. I think I can safely say that there aren't too many major health care areas we don't touch with our research.

We are actively working to form cross-school and cross-university collaborations that bring together tenure track, clinical track, and research track faculty. One of the ways to accomplish these collaborations is through the establishment of multidisciplinary groups. We have seven established and developing centers, collaboratives and initiatives at UMSN, some of which we highlight in these pages. These efforts represent our faculty's desire to collaborate, and our school's willingness to invest in collaborative work to increase our impact in critical areas.

Educating the next generation of scientists is a responsibility we take very seriously. Three years ago we moved to a three year Ph.D. program in keeping with recommendations made by the Robert Wood Johnson Foundation and other entities. We are now involved in evaluating the effectiveness of this program to make sure it is meeting the needs of our students and producing the best possible scientists.

Nursing research is a critical aspect of health care research. UMSN continues to address important areas of health through innovative and impactful science designed to improve practice, health care delivery, and above all, patient outcomes.



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IMPACT

Janet L. Larson, Ph.D., RN, FAAN, examines the role of exercise in improving functional health in older patients with COPD.

Using big data sets and computational modeling to examine the development of chronic diseases such as Parkinson's disease.

Optimizing pelvic floor function for obstetrical issues and for victims of rape.

Discovering ways to reduce the development of chronic conditions in low wage service workers such as hotel housekeepers.

Working with local sheriff's officers to prevent deaths from acute opioid overdose in the community through administration of nasal naloxone.

Developing and testing interventions to increase HIV prevention and improve health engagement.

Using narrative interventions to reduce homelessness recidivism.

Testing innovative care models to improve maternal and newborn health in areas of the world challenged by a lack of human resources.

Examining ways to reduce debilitating fatigue in cancer patients.

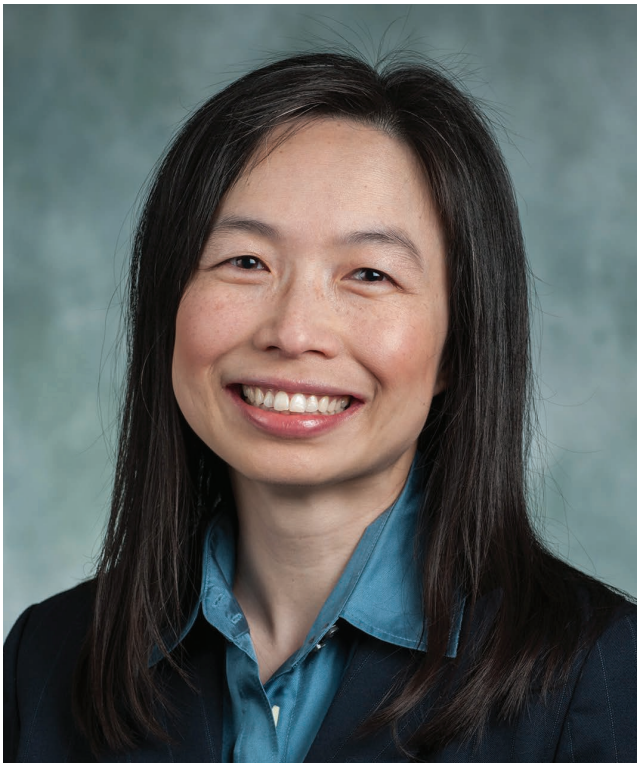
Developing a parenting intervention designed to prevent childhood obesity in the pre-school population.

Preventing hearing loss in farmers.

Advancing patient safety by improving communication between doctors and nurses.

Using large data sets to examine service substitution for non-specific back pain among Medicare patients, with specific interest in the availability and use of chiropractic care.

Translating basic science findings to clinical patients to prevent chemotherapy-induced neuropathic pain.



Informing practice and reducing opioid mortalities through research and hands-on efforts

Chin Hwa (Gina) Dahlem, Ph.D., FNP-C, FAANP
Clinical Assistant Professor

Department of Health Behavior
and Biological Sciences

As a clinician and a scholar, I identify clinically-relevant issues to guide my research in order to inform practice. My experiences as a nurse practitioner providing primary care to vulnerable populations including adolescents, prisoners and people experiencing homelessness have helped me to understand their complex medical and social issues.

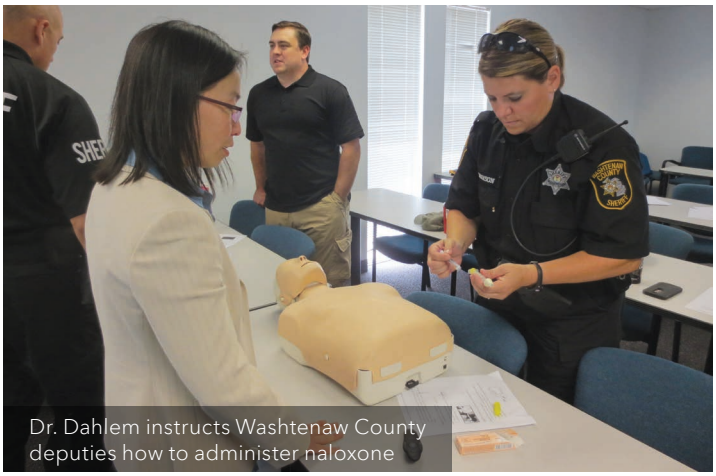
In my master's program, I co-developed a comprehensive adolescent risk assessment, entitled Rapid Assessment for Adolescent Preventive Services (RAAPS), which is now used nationally and globally as a web-based health risk assessment tool for adolescents.

I had been practicing at a homeless shelter for several years when our team began to notice an increasing number of opioid overdoses. As a result, two physicians (Molly Horstmann and Brent Williams) and I developed and implemented an opioid overdose prevention and education program for our shelter staff using intranasal naloxone.

As the opioid epidemic progressed, I was invited by the Washtenaw County Sheriff's Office (WCSO) to deliver naloxone training to their deputies in 2014. This led to the training of more than 600 first responders in our region. To date, the WCSO alone has saved more than 50 lives.

My work involves using a community-based participatory research approach to reduce opioid overdose mortality. Along with community partners from the sheriff's office and Home of New Vision, a local substance use treatment facility, we have received two grants from the Blue Cross Blue Shield Foundation of Michigan and Michigan Institute for Clinical Health Research to develop web-based naloxone training for law enforcement officers and community laypersons. In addition, I am working with Community Mental Health Partnership of Southeast Michigan to develop and implement a "train the trainer" program for Washtenaw, Monroe, Livingston, and Lenawee counties.

Through wide dissemination of our evidence-based opioid overdose prevention and education, we hope to reduce opioid overdose mortality and give hope for recovery for people affected by drug addiction.



Dr. Dahlem instructs Washtenaw County deputies how to administer naloxone

The team, the team, the team: How healthcare teams save lives

Deena Costa, Ph.D., RN
Assistant Professor

Department of Systems, Populations and Leadership

Many people will be cared for by a team of intensive care unit (ICU) professionals at some point in their life, especially as they age. The ICU team delivers life-saving and life-sustaining treatment in a dynamic and complex environment. Many professions are involved in ICU patient care - nurses, physicians, respiratory therapists, physical therapists and more. This large, interprofessional team is responsible for coordinating multiple complex care practices to improve survival.

Thus, coordinating care and ensuring that the team works together well is of the utmost importance. However, measuring and identifying ways to improve how the ICU interprofessional team works together is notoriously difficult.

One of the main difficulties with measuring interprofessional teamwork in the ICU is that the teams are fluid and dynamic. Unlike football teams where team membership is stable, ICU teams change on a shift-to-shift basis. This also means that there are many different "sub-teams" working together for needs that vary depending on the shift, day and patient. The presence of sub-teams and constant flux in ICU teams introduces more complexity and can make quantifying teamwork challenging, as you need to first identify who is part of the team, before moving forward to assess how they work together.

Another challenge is that despite our belief and anecdotal experience that effective teamwork saves lives, the data supporting this notion in the ICU, are weak at best. Most of the prior work relies on surveys to quantify clinician perceptions that are prone to bias, do not acknowledge the presence of sub-teams and cannot assess the process of teamwork.

To attempt to address these issues, I'm moving forward with a unique program of research focused on understanding the dynamics of ICU teams. With a research team that includes nursing, medicine and sociology faculty members, I'm currently funded on a five-year Agency for Healthcare Research and Quality Career Development Award (K08). The goal is to examine the role of interprofessional teamwork in complex care delivery in four ICUs in southern Michigan.

Specifically, I'm tackling first how to quantify the sub-teams or patient care teams of mechanically ventilated patients using novel network analysis approaches. Second, I'm examining the process of interprofessional teamwork using observations, shadowing and interviews to shed light on the process of teamwork. Lastly, I'm examining how team structures influence patient outcomes such as duration of mechanical ventilation and incidence of ventilator-associated events.

This study will be the first to quantify ICU patient-care teams and bring evidence supporting the link between ICU interprofessional teamwork and patient outcomes, hopefully to save lives and improve care.

RECENT FACULTY RESEARCH AWARDS

Deena Kelly Costa
Assistant Professor

Harriet H. Werley New Investigator Award by Midwest Nursing Research Society, 2017

Deborah M. Price
Clinical Assistant Professor

American Association of Critical Care Nursing Research Abstract Award for 2017

Denise M. Saint Arnault
Associate Professor

Fulbright Flex U.S. Scholar Award

Stephen Strobbe
Clinical Associate Professor

Fulbright U.S. Scholar to Brazil, 2017-2018, "Core" Flex Teaching/ Research Award

Dana Tschannen
Clinical Associate Professor

2017 Midwest Nursing Research Society (MNRS) Health Systems, Policy, & Informatics Distinguished Scholar Award

(L to R) FNINR President Karen Drenkard, FNINR board member Mary Kerr, Colleen Conway Welch, Janean Holden, Louise Woerner

UMSN ASSOCIATE DEAN EARNS PRESTIGIOUS RESEARCH AWARD

Janean Holden, Ph.D., RN, FAAN, received the 2017 Welch/Woerner Path Paver Award from the Friends of the National Institute of Nursing (FNINR). The esteemed award honors a mid-to-late career nurse scientist who has achieved breakthroughs in research and positively influenced the next generation of nurse researchers.

Holden is the associate dean for Research and Rackham Graduate Studies at the University of Michigan School of Nursing (UMSN). She is also the Barbara A. Therrien Collegiate Professor of Nursing.

Holden has developed an impressive body of research focused on brain mechanisms that modify pain in the spinal cord, with emphasis on the hypothalamus and norepinephrine system, and chemotherapy-induced neuropathy. Holden has achieved significant findings in understanding the structure and behaviors of the system, related pain, and drugs that promote pain relief. Her efforts have also led to the translation of this work to patients and improvements of their care and outcomes.

"Dr. Holden's research is well recognized as pioneering and pivotal to expanding knowledge about the neurological experience and perception of pain," said UMSN Dean Patricia Hurn, Ph.D., RN, FAAN. "She has led research endeavors of many different kinds, and constructed administrative and review processes to promote the highest quality of research. She shows the way every day to colleagues and students as to how one can use bench science to answer questions that matter to nurses as clinicians and practitioners."

The mentorship of students and early career scientists was another factor in the selection of Holden for this award. In addition to the dozens of undergraduate and graduate nursing students she has mentored, she includes students from other disciplines on her research team which helps them develop an understanding of the value and contributions of nursing science. Many of her mentees, nursing and otherwise, have gone on to develop their own bodies of research, including some who are building on Holden's discoveries.

"It is an honor to be recognized by one's peers and a privilege to represent the great scientists and teachers who helped me hone my craft, including Barbara Therrien, Herb Proudfit, and Kate Potempa," said Dr. Holden. "And I must recognize the NINR that has supported my research and the work of so many others. I don't know about a village, but I do know it takes a lot of brains working together to improve patient care."

Holden received the award in October at FNINR's annual NightinGala which was held in Washington, D.C.

UMSN CENTERS AND INITIATIVES

Health Analytics Collaborative (HAC)

UMSN's recently-established Health Analytics Collaborative (HAC) is a new initiative dedicated to coordinating analytics through a team-based trans-disciplinary approach. HAC members, which include U-M faculty, research fellows, students and staff researchers, are collaborating to foster the integration of innovative research, development, training, and outreach in data and health sciences.

HAC's four pillars

Basic science: Developing mathematical representations, statistical models, and analytics protocols for large datasets with incongruent and multi-sourced data.

Computational and data science: Creating protocols and scalable web-services that enable holistic interrogation of data, information extraction and clinical decision support.

Biomed and health applications: Developing protocols for multi-source data fusion, data wrangling, exploratory and confirmatory analytics, and advanced scientific visualization.

Training and trans-disciplinary education: Leading and participating in a variety of U-M and outside working groups to advance efforts by using knowledge and skills of multiple disciplines.

Current research focus areas

- Chronic conditions (e.g., pain, substance use, Alzheimer's disease, Parkinson's disease)
- Health disparities
- Sexual health
- Brain development
- Maturation and aging
- Imaging genetics
- Connectomics
- Data wrangling methods and analytical techniques including innovative visualization, data mining and classification, pattern extraction, motion-charts, and computable phenotypes

Constituents

- Clinicians and health science investigators
- Methods and basic science researchers
- Computational, statistical, informatics, and ethics researchers
- Engineers and others interested in tool development

Featured resource: The Statistics Online Computational Resource

SOCR is an open-access online resource dedicated to designing, validating and freely disseminating data and knowledge. The website is a source for data management, modeling and analytic techniques, learning materials and instructional resources.

Having the tools for researchers to make sense of and advance the data to real-world settings is key to informing practitioners, patients and policymakers. Dinov and colleagues are addressing concerns that the benefits of big data may not be fully realized without significant research and development investments. They are working on a number of projects to address those concerns, such as a web application to efficiently integrate visualization with data management.

Visit **socr.umich.edu** to learn more about and utilize the available resources.

"It's critically important to have an agile infrastructure to train the next generation of scientists. The HAC provides a responsive foundation for researchers, especially doctoral students, to advance their training and education."

Ivo Dinov, Ph.D.
UMSN professor and SOCR director

Dr. Barton and NPO Deputy Director Trevor Brooks

Leading a new alliance for cancer care

UMSN is the National Program Office (NPO) for the newly-formed Alliance to Advance Patient-Centered Cancer Care (Alliance). It brings together a coalition of six influential academic health centers to help improve the delivery of care for cancer patients.

"It's an initiative to advance strategies that have been proven to help patients, through research, by implementing those approaches in real-world settings," explained UMSN Professor Debra Barton, RN, Ph.D., FAAN, who will serve as director of the NPO.

"Some people need continued help and there may be lasting physical effects such as chronic pain and fatigue," said Barton.

As the NPO, UMSN will lead cross-site evaluations and focus on identifying and disseminating best practices. The NPO will provide technical and administrative support, and be the catalyst to advance successful strategies, with potential for national and international reach.

U-M's strength in interdisciplinary collaboration will be incorporated into the NPO. John Ayanian, M.D., M.P.P., a School of Medicine professor and director of U-M's Institute for Healthcare Policy and Innovation will serve as a consultant. UMSN Professor Marita Titler, Ph.D., RN, FAAN, will be part of the evaluation team and the U-M School of Social Work's Curtis Center, will serve as the cross-site evaluation team, led by Ebony Reddock, Ph.D., MPH.

Program sites are Grady Health System, Johns Hopkins University, Massachusetts General Hospital, Northwestern University, Ohio State University and the University of Arizona.

ALLIANCE'S FOCUS

Improving the coordination and integration of care, particularly between primary and specialty care

Creating strategies aimed specifically at improving care for underserved populations

Strengthening patient-provider communication

Boosting patient engagement and empowerment

Building sustainable community partnerships

Providing psycho-social care to assist patients with needs beyond treatment

The psycho-social component will also support the increasing number of cancer survivors.

UMSN CENTERS

NEW

The Center for Improving Patient and Population Health at the University of Michigan School of Nursing

UMSN is launching an interdisciplinary center to improve patient and population outcomes and strengthen delivery systems. The center will focus on patients with cancer, patients with other serious illnesses or complex needs and population-level science.

"This is the continuation of our journey to measure and improve care delivery," said Professor Christopher Friese, Ph.D., RN, AOCN®, FAAN, pictured left, who will serve as the center's director and was recently installed as the inaugural holder of the Elizabeth Tone Hosmer Professorship at UMSN. "We also hope to expand that work to populations and individuals who may not be in formal healthcare settings."

Friese's research focuses on understanding and improving health care delivery in high-risk settings, with an expertise on cancer.

"My goal is to distill the lessons I have learned from past collaborations, other highly productive teams, and from my recent Robert Wood Johnson Foundation (RWJF) Health Policy fellowship," he said. "The center will embrace novel methodologies including mixed methods, survey research, data science, mHealth, implementation science and complex interventions."

Friese says the RWJF health policy fellowship gave him a new understanding of the changing role scientists must embrace to ensure their findings are available and understandable to decision makers such as health system executives, insurance companies and policy makers.

"We need to build better relationships and improve our outreach," he said. "In many cases, we have the ability to give policy makers very specific data that is relevant to their constituents and local areas. Data can rule the day and it's up to us to bring the data to them in a meaningful way."

The center will also provide a home for doctoral students and postdoctoral fellows, as well as early-career faculty to build and advance bodies of research that support the center's goals and address emerging health care issues that impact populations and health care systems.

Center for the Study of Drugs, Alcohol, Smoking and Health (DASH)

Carol Boyd, Ph.D., RN, FAAN, pictured left, will lead UMSN's new Center for the Study of Drugs, Alcohol, Smoking and Health (DASH). The interdisciplinary center will focus on population trends, prevention, treatment, and care for patients, including those with co-morbid health problems, related to substance use and misuse.

The DASH team, which includes interdisciplinary faculty, postdoctoral fellows and graduate students, is committed to advancing knowledge of substance use and its consequences through pioneering scholarship, evidence-based prevention, innovative clinical training and timely public policy and service.

Additional UMSN Centers

Center for Complexity and Self-Management of Chronic Disease (NINR – P20)

Led by Dr. Deb Barton and Dr. Ivo Dinov, the center provides support for interdisciplinary approaches to self-management of chronic disease. The center funds interdisciplinary pilot projects that could lead to additional studies with a larger reach.

Visit **nursing.umich.edu/cscd** for more information.

The Center for Sexual and Health Disparities (CSHD)

Led by Dr. Rob Stephenson, CSHD promotes conduct of research on all aspects of sexuality, gender, and sexual health with a specific focus on the individual, community, and structural factors that shape the risk of poor sexual health and HIV/STIs.

Visit **sexualityandhealth.org** for more information.

GRANTS AND RESEARCH ACTIVITY

The average funding rate across NIH institutes is 5-15%. The UMSN rate is **31%.**

Total research funding level of **$49 million.**

GRANTS AND RESEARCH OFFICE (GRO)

Karen Kirchner
Research program manager

GRO's mission is to create and maintain a superior infrastructure for the support of School of Nursing researchers thereby enabling outstanding research activities.

GRO's team, compised of three pre-award and three post-award grant administrators, a research development specialist, and an HR representative, provides grant "cradle to grave service."

APPLIED BIOSTATISTICS LABORATORY

Rob Ploutz-Snyder, Ph.D., PStat®
Director

The lab collaborates with investigative teams to design experiments, plan statistical analysis (including sample size justification), provide post-award statistical analysis in support of grants, and aid in preparing/submitting grant proposals.

STUDENT HIGHLIGHTS

New grant on health, safety, and chronic disease welcomes first fellows


Two UMSN Ph.D. students have been selected as trainees on a National Institute of Nursing Research (NINR) T32 grant.

The grant, Complexity: Innovations in Promoting Health and Safety (CIPHS), provides funding for Ph.D. students and postdoctoral nurse scientists to advance research promoting health and safety through the development and testing of interventions for a specified population.

The grant includes opportunities for the fellows to promote health through areas such as injury prevention, improving healthcare provider communication and addressing maternal mortality. Another area of opportunity focuses on promoting health for people to live well with chronic illness. Examples include improving sexual health in women with cancer, increasing physical activity in people with chronic lung disease and testing interventions for people with post-traumatic stress disorder.

The first UMSN students to be selected for this grant are Clare Donohoe (left) and Katelyn Webster (right). Donohoe, who is also a Hillman scholar, will focus her fellowship on promoting wellness in children and adolescents with cancer. Webster is interested in quality of life in people with chronic conditions.

Marita Titler, Ph.D., RN, FAAN is the program director for the grant. Marjorie McCullagh, Ph.D., RN, APHN-BC, COHN-S, FAAOHN, FAAN is the associate program director. The grant provides funding for eight predoctoral and two postdoctoral trainees over five years.

Yoga research receives award

Doctoral candidate Mohamad Baydoun received a $5,000 research award from the Oncology Nursing Society (ONS) Foundation for his dissertation research on "Yoga for persistent fatigue in the survivors of bone marrow transplantation (BMT)."

Baydoun has six years of experience as an oncology nurse. Because yoga is easy to implement, appealing to patients, and can be self-administered, Baydoun believes it has potential to reduce fatigue after BMT, which can limit activities and cause distress.

Baydoun's faculty mentor is Debra Barton, Ph.D., AOCN, FAAN, RN. He expects to defend in April 2018.

Student paper award

Clayton Shuman, Ph.D, RN, won the Midwest Nursing Research Society/SAGE Best Student Paper for a publication he wrote with UMSN's Dr. Marita Titler and Dr. Robert Ploutz-Snyder.

"Development and Testing of the Nurse Manager EBP Competency Scale" was published by the Western Journal of Nursing Research. The paper was written while Shuman was a UMSN Ph.D. student. He joined UMSN as assistant professor in September 2017.

Ph.D. candidate from South Korea receives Karl C.K. Ma fellowship

Kayoung Lee is a Ph.D. candidate at the University of Michigan School of Nursing, in the department of systems, populations, and leadership. She is a recipient of the Karl C.K. Ma Endowed Graduate Scholarship fund, an endowment intended to support careers in public service by providing student funding to graduate students in the Schools of Nursing, Education and Social Work.

Lee has a background as a nurse in the Neurological Intensive Care Unit at Yonsei University Health System, Seoul, South Korea.

She says: "Throughout my nursing education, I have learned the importance of holistic health care, which not only focuses on eliminating pathological factors, but also considers the environmental or societal impacts on health. My research interests are injury prevention and environmental safety for older people with heart failure."

Many heart failure patients have symptoms that predispose them to falls, and fall-related injuries often make performing daily activities difficult, which increases risk of long-term care admission and healthcare costs.

Many thanks to those who support our mission

Fund	Purpose
Janet Gatherer Boyles Endowed Clinical Research Fund	To support clinical research in the School of Nursing.
Lucile M. & Clayton H. Clark Faculty Research Fund	To provide seed money for beginning faculty researchers.
Janeth M. & Amherst Turner Nursing Research Fund	To support research activities at the School of Nursing.
Carl Pursell Endowed Nursing Research Fund	To support research directed toward providing high quality nursing care.
Elsie Andresen Fiske Research Fund	To support research conducted by the School of Nursing in the field of disorders of memory and behavior with emphasis on Alzheimer's Disease.
Donald and Karin Allen Faculty Support Fund	Faculty support in acute, critical and long-term care.
Ada Sue Hinshaw Fund	To support research endeavors at the School of Nursing.
The Shirley Walter Dunbar Innovation in Wound and Ostomy Care	To support the development of innovations in wound and/or ostomy care, which may include, but is not limited to, projects ranging from genomic level research to new clinical processes for care.
Nancy Bergstrom Early-Investigator Research Scholar Award	To support early career faculty research at the School of Nursing.
Dr. Beatrice Kalisch Faculty Research Fund	To support faculty research conducted by nursing faculty who are registered nurses with a terminal degree in the field of nursing. Preference for research focused in the areas of systems, leadership, patient quality and safety nursing.

Donations to the Funds for the School of Nursing – #314007 are used to support research projects.

Contact us if interested in making a donation
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Ph.D. Reunion 2017

UMSN held its first Ph.D. reunion in recent years. Dozens of alums returned to campus to reconnect, meet current doctoral students and learn about the exciting research happening at UMSN.