

YSN

scientists & their work

As the first university-based nursing school, Yale School of Nursing set the mold. Founded with Rockefeller Foundation funding in 1923, YSN first conceived of nursing education as an academic endeavor. Within a few decades of its beginning, YSN actively shaped the way that nursing science and research methods connected to health outcomes. Nursing was advanced by YSN luminaries like theorist and researcher Virginia Henderson, research methods pioneer Donna Diers, and Rhetaugh Dumas, who was the first to use experimental designs to evaluate the effectiveness of clinical nursing practice.

Nursing science at Yale School of Nursing incorporates biology with behavior; an understanding of the place of individuals in interaction with the social structures and physiologic processes contributing to ill health or wellness. Nursing and midwifery science sits at the nexus of basic, clinical, biobehavioral, translational, and community-engaged research. The unique ability of nursing science to work in that space allows a rich understanding of health at the intersection of many components: not just environmental but also access to care factors; not only genetic and epigenetic makeup, but educational interventions.

Nursing is the discipline that leads the application of science to clinical practice. Our faculty have shaped the world's view of nursing, integrating evidence-based care into practice in order to meet our social mandate of *better health for all people*.

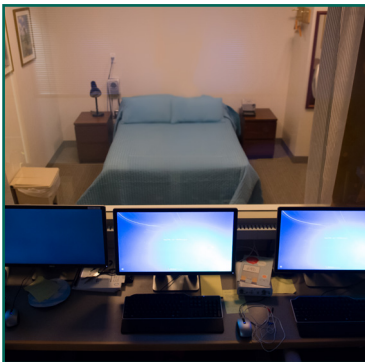
Today, YSN scientists are using innovative data capture, analytic methods, and design and delivery of evidence-based interventions to address health priorities in the US and globally:

- genetic analysis signaling different treatment thresholds of African American children in Flint, Michigan with lead poisoning;
- palliative care delivery models in Israel and Jordan and among vulnerable populations in the US;

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(Above) YSN professor **Linda Honan** meets with students in Yale's Center for Engineering, Innovation, and Design (CEID) about a prototype of Beat Box, a new device for improving the way students learn to palpate the radial pulse.



(Above) YSN's on-site **Biobehavioral Laboratory** includes specimen storage, fully equipped focus group rooms and recording equipment, a sleep lab, and more.

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- use of cell phones and tablet computers to deliver evidence-based medication adherence support for people living with HIV in Washington DC, Ghana, India, and Kenya

In 2000, the American Academy of Nursing called nursing science “a basic science, the substantive discipline-specific knowledge that focuses on the human-universe-health process.”

With a relatively small but focused group of faculty scholars, in 2016 YSN ranked in the top tier of nursing schools nationally in terms of National Institutes of Health funding. YSN faculty research is published in nursing and medical journals as well as for audiences as varied as the readers of *Nature* and of the *New Yorker*. Studies are funded by the National Institutes of Health, Agency for Healthcare Research and Quality, foundations, and others, for innovative research in New Haven, the US, and around the world.

The scholarship of Yale nurses and midwives helps people manage their chronic conditions, prevent disease and disability, manage symptoms, understand genetic risks, have healthier pregnancies and outcomes at the start of life, and compassionate and supportive care at the end of life. YSN research develops new interventions as well as helps translate successful interventions into effective practice. It means studying how to achieve the best impact on people who need help, especially the underserved and vulnerable.

As part of the aspiration of Yale to be *the research university that most values teaching*, YSN also uses educational technologies and pedagogical innovations, including clinical simulation. Faculty and students from YSN collaborate in interprofessional educational efforts, including a longitudinal clinical course with colleagues from Yale School of Medicine and the Physician Associate's program. At the end of the year, all students' empathy scores were documented to have increased.

The **YSN Biobehavioral Research Laboratory** is designed to support cutting-edge research to address significant biobehavioral patient-oriented health problems through the provision of facilities, infrastructure support, consultation, and education. The lab is a 2,800 square foot facility that includes the capability for full laboratory-based and ambulatory sleep studies, a fully equipped physical examination room, resources for biospecimen acquisition and analysis, a 12-seat focus group room and a human observation lab that has state-of-the art equipment for digital video monitoring.



Yale Center for Sleep Disturbance in Acute and Chronic Conditions

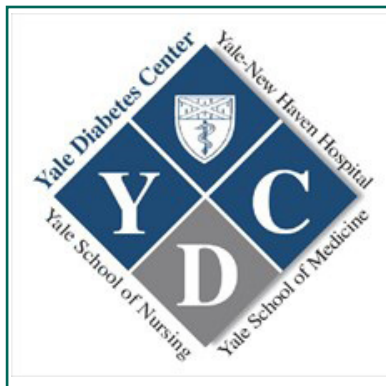
The Yale Center for Sleep Disturbance in Acute and Chronic Conditions, funded by National Institutes of Health (NIH) and National Institute of Nursing Research (NINR), is a joint effort between Yale Schools of Nursing and Medicine, led by PIs Nancy S. Redeker, PhD, RN, FAHA, FAAN, and Henry Yaggi, MD, MPH. The Center supports research focused on self-management of sleep disturbance among people with acute and chronic conditions, as well as those at-risk for chronic conditions. Studies include participants characterized by racial and ethnic diversity across the lifespan, as well as those in home, community, and hospital environments.

science leading care

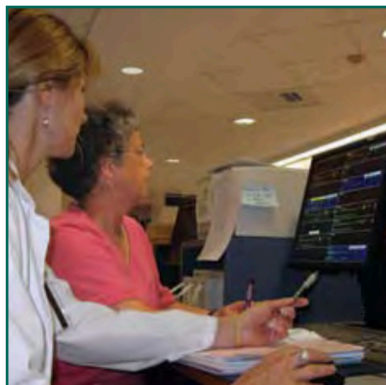
Whether as individual principal investigators or collaborating in a team science environment, YSN nurses and midwives are prolific researchers with key contributions to health science. Some selected, recent highlights:



Dr. Marianne Davies serves on an interdisciplinary team of researchers and clinicians treating stage IV lung cancer patients at Smilow Cancer Center, developing new immunotherapies (new vaccines to stimulate antibody and T-cell responses and use of immune checkpoint inhibitors) and new clinical practices to conduct successful immunotherapy and minimize or prevent the related toxicities.



Dr. Elizabeth Doyle's clinical research focuses on psychosocial adaptation to type 1 diabetes, diabetes management technology, transition of care from pediatric to adult care for youth with diabetes, and disordered eating behaviors in adolescents and young adults with type 1 diabetes. Her clinical practice at Yale Diabetes Center focuses on the transitional care program.



Dr. Marge Funk's research focuses on the wise use of technology in the care of critically ill patients. Most recently, she has addressed ECG monitoring and clinical alarms. She was the principal investigator of the PULSE Trial, a 6-year 17-site randomized clinical trial on implementing practice standards for ECG monitoring. The PULSE Trial is an example of translational research in which the effectiveness of an intervention in real-world clinical practice is tested. Her research also addresses patient safety related to the cacophony of alarms from the growing number of devices at the bedside.



Dr. Margaret Grey develops and researches self-management interventions for children and adolescents with diabetes that have lowered blood sugar and improved quality of life. A member of the National Academy of Medicine, Dr. Grey is using the Internet as a compelling tool to reach out to youth and significantly broaden the application of this type of self-management training. She has NIH funding (NINRT32) for a multidisciplinary behavioral research training program at Yale for behavioral scientists who commit to research for better clinical management and quality of life in type I diabetes.



Nearly one in three individuals will experience a mental health illness over the course of a lifetime, and these conditions, including addiction, are among the leading causes of disability from non-communicable diseases worldwide. **Dr. Joanne Iennaco's** research focuses on psychiatric epidemiology and occupational mental health. Dr. Iennaco's clinical work is with young adults and adults with complex mental health needs, and she leads YSN's Psychiatric Nurse Practitioner program, one of only two in Connecticut. Dr. Iennaco's recent research addresses evidence-based approaches to reducing aggression in hospitals.



Dr. Cecilia Jevitt's scholarship focuses on perinatal weight gain optimization and integrating obesity prevention and weight maintenance into women's health, particularly in prenatal and postpartum care. She developed the concept of advantage lists – lists of evidence-based, patient self-care behaviors that improve health (advantages) – and its use with motivational interviewing in health counseling. Currently Dr. Jevitt is conducting an analysis of more than 30,000 births from the American Association of Birth Center's Perinatal Data Registry® to investigate the role of obesity in perinatal outcomes. Dr. Jevitt is specialty coordinator of YSN's Midwifery Program, which is ranked second in the nation, and the Women's Health Nurse Practitioner Program.



Dr. Holly Powell Kennedy is helping shape the global research agenda in midwifery, serving as part of an international team of experts that identified and assessed competing research gaps worldwide in maternal and child health. Her work plays a central role in two *Lancet* series, including a research agenda the *Lancet* published in August 2016.



Dr. Tish Knobf's clinical practice with women with breast cancer has been foundational to her clinical scholarship and program of research. Dr. Knobf's current research is focused on cancer survivorship, addressing persistent and late effects of therapy. The Yale Fitness Intervention Trial (Yale FIT), a NCI funded study, compared an aerobic-resistance exercise intervention to a home-based physical activity program on bone mass, body composition, metabolic risk factors, and cardiovascular fitness. She has also conducted psycho-educational interventions to improve self-management and decrease health risks in ethnic minority cancer survivor populations.



Dr. Ruth McCorkle, a pioneer in oncology nursing, began her research career at St. Christopher's Hospice in London. She developed the Symptom Distress Scale which has been translated into six languages, and continues to be used globally today. She is a member of the National Academy of Medicine. McCorkle and her team have consistently demonstrated that a standardized nursing intervention delivered by advanced practice nurses can reduce cancer patients' symptoms, improve activities of daily living, reduce uncertainty, enhance mental health status and extend survival; in addition to reducing caregiver burden. Her research was used to support the passage of the Family Leave Act (left) in the 1990s.



Dr. Ann Kurth, a member of the National Academy of Medicine and current dean of YSN, is an epidemiologist and global health specialist with expertise in patient-centered informatics and HIV/sexually transmitted diseases. Currently, she leads several NIH-funded studies focused on increasing HIV testing and services for at-risk young women in Kenya and a stepped wedge cluster-randomized trial assessing community HIV-1 viral load impact analysis of Kenya's national needle exchange program, the first in sub-Saharan Africa.



Dr. Mark Lazenby focuses his work on developing and testing interventions to enhance palliative care outcomes among patients with cancer from under-represented cultural and religious groups. His current work, funded by the American Cancer Society, examines the palliative care experience of Muslims who are in treatment for cancer in the United States. He also explores nursing's ethical and social mandates in his books *Caring Matters Most* (Oxford University Press [OUP], 2017) and *Toward a Better World* (OUP, forthcoming).



Dr. Soohyun Nam is studying social networks and obesity risk behaviors among African American women. Dr. Nam has expertise in the field of chronic disease self-management such as obesity, type 2 diabetes and cardiovascular diseases, and health disparities research for underserved adults of diverse race/ethnicity. Her previous work has found that adults of diverse race/ethnicity experience multiple barriers to accessing and navigating healthcare systems and to managing their chronic diseases that often require substantial health behavior change and self-management.



Dr. Monica Ordway's scholarship focuses on examining the role of sleep as a potential buffer to the prolonged stress response associated with toxic stress among very young children living with adversity. Recently awarded a K23 (clinical research training grant) from NINR, Ordway's current project assesses the relationship between stress biomarkers in hair and saliva and sleep data collected by an actigraph.



Dr. Nancy Redeker's research is focused on the contributions of sleep and sleep disturbance to functional performance, recovery and quality of life and the development of self-management interventions for sleep disturbance across populations and settings. She is the principal investigator of a 5-year \$3.3 million study focused on the sustained efficacy of cognitive behavioral therapy for insomnia among patients with stable heart failure and, with Dr. Lois Sadler, is a principal investigator of a community-engaged NIH-funded study designed to create a community partnership to promote health sleep and reduce the negative effects of sleep disturbance in young children who live with economic adversity.



Dr. Nancy Reynolds investigates the complexities of self-care behavior, especially treatment adherence, among people living with chronic conditions. Her work seizes on the potential of low-cost, widely used technologies to broaden patients' access to personalized care. She is currently the lead of four NIH-sponsored projects being conducted in India and Ghana that are focused on enhancing treatment adherence and health outcomes of HIV+ women and children. Dr. Reynolds is also the director of an ongoing T32 training grant in chronic illness self-management (NIH, NINR). This grant supports the research training of 6 pre- and post-doctoral fellows.



Dr. Lois Sadler continues her commitment to community-engaged research supporting the health of young families. She and Dr. Nancy Redeker work on an NIH-funded study with other YSN, YSM, and community colleagues on development of a healthy sleep program for urban families raising young (6-36 month) children. She is also principal investigator of a W.K. Kellogg Foundation-funded implementation project for the dissemination of the Minding the Baby® home visiting program, tested in New Haven and now translated for urban communities in Florida, Scotland, England, Denmark and Brazil. The Minding the Baby® program was featured in an early 2016 issue of the *New Yorker*.



Dr. Jacquelyn Taylor's research integrates -omics (genomics, epigenomics and metabolomics) into the study of the care of racial/ethnic minorities. She has led many studies on the interactions between genes and the environment in Black populations. In July this year, working with colleagues from YSN and MIT, Taylor published a call in *Nature Genomic Medicine* for additional testing and treatment of the residents of Flint. Taylor's genetic research illuminates the opportunity for nurses to carry out a state-of-the-science, genetically targeted intervention that could be instrumental in reducing risks to health elsewhere.



Dr. Robin Whittemore studies lifestyle change to prevent and treat type 2 diabetes, as well as the psychosocial adjustment to chronic illness. Dr. Whittemore has funding from the NINR to develop and evaluate a diabetes self-management education and mHealth program in Mexico City. She also has funding from the National Institute of Diabetes and Digestive and Kidney Diseases to develop and evaluate a mHealth program for parents of teens with type 1 diabetes.



Dr. Julie Womack's research interests include HIV/AIDS in an aging population with a particular interest in HIV-infected women. Dr. Womack uses natural language processing and machine learning to explore associations between HIV infection and conditions associated with aging, including falls, heart disease, sleep disturbance. She partners with clinicians and patients at the Veterans Affairs Hospital based in West Haven, Connecticut (*left*).

YSN's National Institutes of Health Research Areas

Density of YSN faculty members' research in a given NIH category

Duplication of individuals (unique n=34) allowed among subitems.

Self-Management, Acute Care, & Palliative Care of Persons Living with Chronic Conditions

75

self-management, adherence, mHealth, palliative care, CV disease, HIV, diabetes, cancer, mental health, co-morbidity, older adult, caregiver

Global Health & Underserved Populations

39

global health, high risk/underserved populations, community/CBPR, planetary & environmental health

Maternal-Child Health Promotion

38

women's health, maternal-child health, pediatric/adolescent, family, transitional care & emerging adults

Biological & Biobehavioral Nursing Science

27

sleep, symptom science, genomics, biomarkers/biobehavioral mechanisms, precision health

Data Science & Health Care Technologies

12

data science, healthcare technology, critical care

Clinical & Translational Science

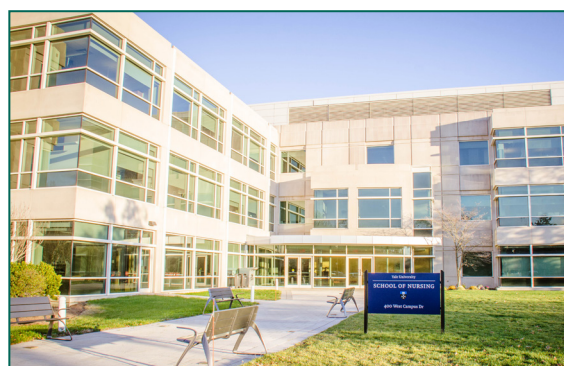
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patient-oriented clinical research, dissemination and implementation science, cost effectiveness, self-report instruments

Innovations in Nursing Education

3

simulation/education, competence/assessment students, teaching & learning with technology



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