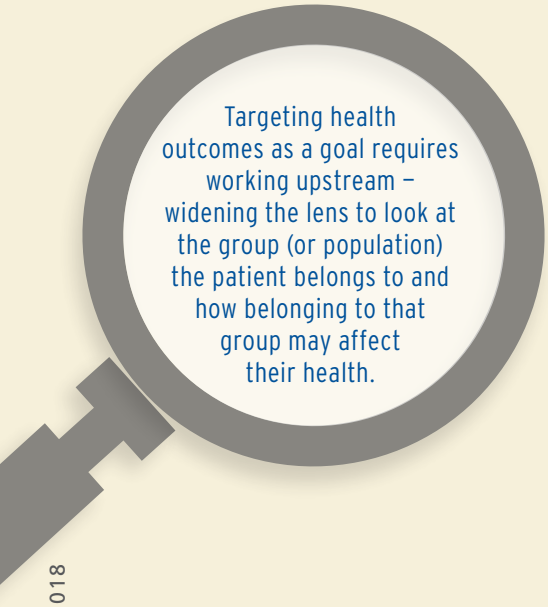
Bringing **Population Health** into Focus



Health care delivery in the United States is undergoing a paradigm shift, and Duke University School of Nursing (DUSON) and Duke University Health System (DUHS), are on the forefront of that shift. Following a trend begun over the last several years by the Centers for Medicare and Medicaid Services (CMS), private insurers are starting to move away from fee-for-service and toward value-based care. This change in payer model parallels a shift toward a population health approach to health care.

"Now we're beginning to look at a patient not only as a holistic human being with many moving parts, but also, most importantly, [as someone] who is part of a larger community across their lifespan," said Marion E. Broome, PhD, RN, FAAN, dean and Ruby Wilson Professor of Nursing, Duke University School of Nursing; vice chancellor for nursing affairs, Duke University; and associate vice president for academic affairs for nursing, Duke University Health System.

One reason for this adjustment in health care delivery is the ongoing rise of health care costs, spurred in part by sheer numbers in the U.S. population. "The boomers are the tsunami of people who are getting older and needing more acute and chronic care management," Broome said. "That's a huge bill." At the same time, health indicators are getting worse. "There's been speculation that the current generation of young people will be the first in the history of the U.S. that will have a shorter life expectancy than their parents."

Enter population health, defined by DUHS as "health outcomes of individuals, including the distribution of such outcomes within the group." Focusing on the patient as an individual is clearly important, but equally important is examining the patient as part of a larger group or population. Within population health, groups can be defined by any number of variables including ethnicity, disease, geography, ZIP code and income level. This broader view requires traditional health care providers to work with community organizations that focus on determinants of health — many of these organizations are outside of health care.

Targeting health outcomes as a goal requires working upstream — widening the lens to look at the group (or population) the patient belongs to and how belonging to that group may affect their health. Since proactively intervening helps slow or stop a disease from occurring, instead of simply treating the patient, population health involves trying to prevent people from becoming patients in the first place. Proactive screenings and treating patients in lower-cost primary care settings can help stem avoidable emergency room treatments and hospitalizations and improve health, lowering overall health costs.

"Given that our ultimate goal is good health, we need to shift our focus to the broader non-clinical determinants of health, while maintaining our excellence in care delivery," said A. Eugene Washington, MD., Duke University Chancellor for Health Affairs and Duke University Health System President and CEO. "Realizing population health improvement will require changes in the classroom, new approaches to in-home care and community engagement, and a

deeper awareness of which strategies best improve overall outcomes."

Under a value-based care system, providers are accountable for a patient's outcome. So where once a successful surgery and discharge might be the end of patient care under a fee-for-service model, ensuring that the patient is able to get to physical therapy appointments, self-administer drug treatments and has proper housing and nourishment, is all part of the broader health outcome approach that can require multiple interventions. It is in this way that partnering with agencies outside of health care to make sure this type of support is available is a means to reduce readmissions and improve community health overall.

But why does population health matter so much?

Taking the example of longevity, studies have found that one of the greatest predictors of a longer life has only so much to do with biology. The real predictors are a variety of environmental and social factors. For instance, educational attainment. Education affects income, which can affect lifestyle and where you reside. Your residence might inform your stress level and environmental factors such as air and water quality, as well as access to social networks and health care. A group of patients in a certain ZIP code might have trouble managing their diabetes, for instance. Closer investigation might lead to the discovery that the ZIP code is in an urban area, where outdoor exercise is difficult or not feasible at all. Population health emphasizes finding effective interventions and solutions to these types of problems through a team-based improvement approach.

"Community health improvement is working with the city, working with communities across the state, to improve the health conditions of individuals," Broome said. "We can only do so much in health care. We need everyone to step up to the plate to help create positive solutions for patients."

Several Durham County community organizations, DUSON and DUHS, are already working to strengthen and create new relationships.

"Population health management goes beyond finding the problem. We know we've identified these issues, we know the challenges," said Devdutta Sangvai, MD, MBA, who leads Duke University Health System's Population Health Management Office (PHMO). "The question is how do we narrow that gap?" Sangvai said the management dimension of population health involves examining data such as electronic medical records and claims records — which capture health visits or procedures outside of a patient's regular providers — to create a more complete picture of a person's medical history. Identifying trends among populations and how certain interventions work or don't inform health care management. "When we look through those lenses — defined by geography, disease state, or payer — based on what you're seeing through that lens, we can design interventions to achieve optimal outcomes."

For DUSON and DUHS, the primary population group is Durham County, so paying special attention to social determinants of health in this community, like immigration status, ethnicity and housing, is important to finding ways health care providers and community groups can better partner together.

Successful population health management strives to foster relationships and create systems of health care delivery that are tailored to the needs of the various groups that are being served. For example, diabetics need regular eye exams and when examination of a diabetic population indicates that isn't happening, identifying obstacles, such as transportation issues or lack of information, and finding solutions is a huge part of a population approach to health care.

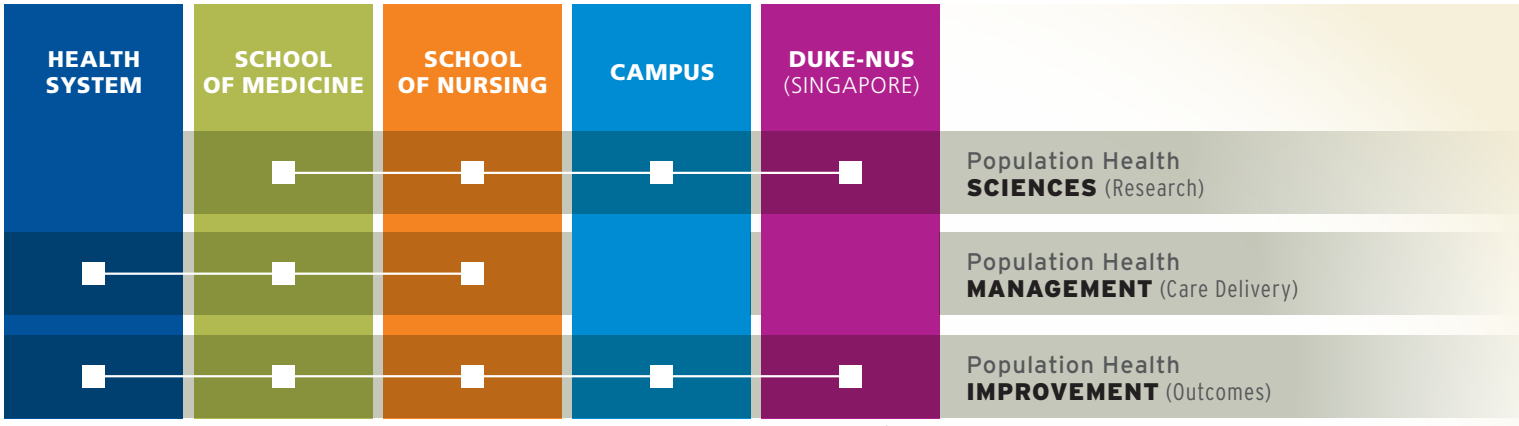
"A population health mindset takes more time between provider and patient," Sangvai said. "It focuses on ongoing dialogue and it involves a lot of back and forth." Not surprisingly, nursing is a critical component of this dialogue. "So much of what we learn regarding why patients make the decisions they do is based on the deeper understanding of why a patient is thinking the way they are. It involves visiting that patient in the home and understanding their needs. Nurses make that visit. They understand the human dynamic, but also have

Broome

Washington

Sangvai

Curtis



Graphic courtesy of the Population Health Coordinating Group, Dev Sangvai and Lesley Curtis, co-chairs

Population Health at Duke

- Healthy Duke
- Office of Community Relations
- Population Health Management Office
- Department of Community and Family Medicine, Division of Community Health
- Department of Medicine, Division of General Internal Medicine
- Department of Population Health Sciences
- Center for Community and Population Health Improvement
- DUSON Community Health Improvement Partnership Program
- Center for Nursing Research
- Population Care Coordinator Program
- Office of Global and Community Health Initiatives
- Duke Global Health Institute
- Duke Margolis Center for Health Policy
- Center for Health Policy and Inequities
- Sanford School of Public Policy
- Duke University Population Research Institute
- Duke Social Science Research Institute

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the clinical background that can process what's happening in that patient's life."

The PHMO also depends on the work of population health science, an interdisciplinary effort at DUHS that involves epidemiology, health services research, implantation science and social and behavioral sciences.

In 2017, Duke's School of Medicine created the Department of Population Health Sciences, chaired by Lesley Curtis, PhD. The department examines social determinants of health and, with collaboration across the university, including DUSON, works to create tools and methods of intervention for health improvement based on the research and scientific findings.

"We have a very active opportunity — bringing together the science and population health management more closely," Curtis said, noting that finding an answer through research is only the first step. Ensuring those answers are actually used to inform how health care is delivered to patients is the ultimate goal. "We want to make sure that people who need hospitalization care receive it, and people for whom some preventative care can help prevent hospitalization, we assist in managing that care."

Part of the science puzzle, Curtis said, is defining health as a concept, and determining what contributes to it. "Although we spend billions of dollars on health care, in reality, it's probably responsible for 10 to 15 percent of health outcomes," she said. It's social determinants of health that matter most: social environment, accessibility to food, preventative health care, transportation and safe places to exercise. The population health care initiative involves research scientists examining these variables, then collaborating with others in the health care delivery pipeline to create and deliver efficient interventions and treatments.

Donna Biederman, DrPH, MN, RN, and assistant professor at DUSON, has worked with Curtis and four others from DUHS over the past year, representing the School in the population initiative group created by Chancellor Washington. The group sponsored a symposium in April 2018 entitled, "Bridging Population Health at Duke." The aim of the event was to "coalesce the Duke University community around a shared vision of improving health through innovative research and advanced care."

"Population health is something that is fundamental to nursing," Biederman said. "It's a profession historically grounded in social justice." In fact, since 2012 DUSON has educated more than 500 health care providers in population health through its Population Care Coordinator Program. Most recently, in 2017 DUSON launched the DUSON Community Health Improvement Partnership Program (D-CHIPP), which Biederman directs.

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eight SCD centers across the country. This large project also aims to improve outcomes for people with SCD that includes several intervention projects as well as the establishment of a large registry for persons with SCD.

Patients with SCD can suffer from medical problems including organ failure, pulmonary complications like asthma, kidney disease, diabetes, stroke and joint replacement is not uncommon. The disease can also cause cognitive dysfunction, which may result in memory loss.

In addition, for many SCD sufferers, their socio-economic status has been impacted by their disease. They may have been sick as children and perhaps missed a lot of school. As adults with a chronic illness, they might find it difficult to find or keep a job, therefore depression and anxiety are common. Managing pain, especially without ongoing help from primary care and SCD providers who understand the disease, can be difficult.

For example, part of Tanabe's research is trying to increase the prescription of hydroxyurea, a proven SCD drug that helps prevent pain crises, which in turn reduces emergency department visits and hospitalizations. It's estimated only 30 percent of patients with SCD take the drug, there will be several interventions between both grants to improve the use. Interventions will include the use of apps, other strategies and educating providers in primary care and emergency settings.

Additionally, patients who have previously fallen through the cracks will be more likely to be identified and linked into the health care system. Findings from this study can also be used to inform health care as a whole, Tanabe said.

"What can we do as a health care system to maximize treatment for people with complex chronic illnesses? What can we learn from other diseases that we can apply to this population that hasn't been done?" she asked. "We all have to talk to each other and unite the health care system and resources around these patients." ■

Improving SCD Care using Web-based Guidelines, Nurse Care Managers and Peer Mentors in Primary Care and Emergency Departments in Central North Carolina
#U01HL133964
Co-Primary Investigators: Paula Tanabe, PhD, MSN, MPH, RN, FAEN, FAAN, professor and Nirmish Shah, MD; Co-Investigators: Rachel Richesson, MS, PhD, MPH, FACMI, associate professor; Hayden Bosworth, PhD, professor, Nancy Crego, PhD, RN, CCRN, CHSE, assistant professor; George Jackson, PhD, associate professor; Fred Johnson, MBA; Janet Prvu Bettger, ScD, FAHA, associate professor and Christian Douglas PhD. Project coordinator: Terri DeMartino; Data manager: Gary Rains; Research Assistants: Sheila Lambert, Emily Bonnabeau, Ebony Burns and Ibraham Sabor; Patient research assistants: Gail Aiken and Darryl Smith; Sub-contract: Community Care North Carolina – Co-Investigator Marion Earls, MD, and Staff Kern Eason.

Disseminating NIH Evidence Based Sickle Cell Recommendations in North Carolina
#R18 RHS024501A
Co-Primary Investigators: Paula Tanabe, PhD, MSN, MPH, RN, FAEN, FAAN, professor and Nirmish Shah, MD. Project coordinator: Emily Bonnabeau; Research assistant: Terri DeMartino: Statistician: Christian Douglas, PhD; Data Manager: Gary Rains. Sub-contract: Community Care North Carolina, Co-Investigator Marion Earls, MD and Staff Kern Eason.

About 1 in 13 Black or African-American babies is born with sickle cell trait (SCT).

Centers for Disease Control

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"We need a fundamental shift in the way we think about things, even from the academic perspective," Biederman said, recalling a challenge issued at the April symposium. "Would you rather have an article published in the New England Journal of Medicine, or would you rather have a program that helped 10,000 people? Which would you choose? Or can teams of providers and researchers do both?"

The call to community health improvement is one that nurses, physicians, scientists, social workers and community organizations are working together to answer. "The reality is, things are moving to team-based care," Broome said. "And nurses have a rich tradition in health promotion and have much to bring to these teams."

Broome said she is excited about this initiative at Duke and how it will play out in the School of Nursing. Instead of dismissing it as a passing idea, Duke as a whole is meeting the paradigm shift head-on.

"Duke is willing to look at the challenges and study them in relatively short periods of time, do deep dives, and ask, 'What are we contributing to this? What can we do differently?" Broome said. "Number 1, this isn't a fad. Number 2, it's the right thing to do and number 3, we need to be part of the solution." ■