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Kudos

Tara Lagu, MD, MPH, was just awarded 5 years of funding from the NHLBI for her R01 proposal “A mixed methods study to identify and refine implementation strategies to increase use of cardiac rehabilitation for patients with heart failure.”

Ksenia Tonyushkina, MD, was awarded a catalyst grant from the Tufts CTSI for her proposal “Partnership between Springfield public school nurses and Baystate Pediatric Diabetes Program to enhance diabetes care for children with T1DM from a disadvantaged population.”

Tara Lagu, MD, MPH, was the recipient of this year’s Award of Excellence in Research from the Society of Hospital Medicine.

Studying strategies used by Medicare Accountable Care Organizations that improve outcomes for patients with heart failure

We interviewed Tara Lagu, MD, MPH, Associate Director of the Institute for Healthcare Delivery and Population Science (IHDPS) and Associate Professor of Department of Medicine at UMMS-Baystate, about her first R01, a four-year, $2.9 million dollar grant from the National Heart, Lung, and Blood Institute that was awarded in July 2018. Dr. Lagu is the principal investigator on the grant, and leads a team of both local collaborators (local coinvestigators are Drs. Peter Lindenauer and Penny Pekow, and research staff include research coordinator Christene DeJong and statistician Kamal Faridi) and collaborators from UMASS Medical School, New York University, Yale, and the University of Pennsylvania.

Tara, tell us why you chose to focus on the role of ACOs in the care of individuals with heart failure?

More than 5.8 million adults Americans have heart failure, and those numbers are expected to rise by 46% in the next two decades. The cost to our health care system is currently about $40 billion a year and is expected to increase to nearly $70 billion by 2030. To address these ballooning costs and to improve quality of care, the 2009 Patient Protection and Affordable Care Act called for the Medicare program to encourage the creation of Accountable Care Organizations (ACOs). ACOs consist of groups of doctors, hospitals, and health systems who come together voluntarily to provide their patients with coordinated, high-quality care. If costs are reduced and quality maintained, the ACO shares the savings with the Medicare Program.

What are the goals of this study?

Our overarching goal is to reduce rates of hospital admission and mortality for individuals with heart failure (HF), and the specific aim of the study is to identify the strategies that successful Medicare Shared Savings Program (MSSP) ACOs are using to improve care for patients with HF. We’re going to first use Medicare data to examine outcomes for patients with HF enrolled in MSSP ACOs. We will then categorize ACOs into high and low performers: high performers are those that have reduced hospital admissions and days in nursing care for patients with HF while also reducing (or, at least, not increasing) deaths. Next, we’re going to visit a few of these high performing ACOs and will interview key staff, managers, and administrators involved in HF care to learn more about how they achieve such positive results. Finally, based on what we learn in those interviews, we’re going to develop a survey that we send out to all other MSSP ACOs in order to understand how prevalent the strategies identified in our interviews actually are in practice. Ultimately, the survey findings will help ACOs identify programs that are most likely to improve outcomes for HF patients.
Lauren Westafer, DO, MPH, had her K12 project selected to be featured as UMMS-Baystate's oral presentation at the plenary session of the Society of Academic Emergency Medicine's 23rd New England Regional Meeting.

Aruna Priya, MA, MSc, IHDPS biostatistician, won 3rd place in the research poster competition at UMass UMass School of Public Health and Health Sciences Research Day. Her poster was focused on the impact of pulmonary rehabilitation initiation for COPD, utilizing data from Dr. Lindenauer's R01 grant.

How did your earlier research lead you towards this project?
As a hospitalist, I have spent many years caring for patients with decompensated heart failure, which has given me insight into the challenge of trying to improve outcomes for patients who are experiencing a progressive chronic disease. During my K01 career development award, I sought to identify strategies that lead to better outcomes for patient with HF patients who are admitted to the hospital. I lead a team of investigators from the IHDPS as well as HF cardiologists at Baystate to first develop a model for predicting mortality rates for patients hospitalized with HF. We examined variation in risk-adjusted mortality rates across more than 500 US hospitals, with the goal of understanding how hospitals with low mortality rates achieved their outcomes. The K01 helped me to realize that studying hospitalization may be too late in the chain of events that lead to death or disability for this vulnerable population. I am now focused on understanding how hospitalization can be prevented, hoping to learn the strategies that keep patients with HF healthier for longer. I have a personal investment in the topic, also. My father has heart failure and has been hospitalized many times with exacerbations. (He’s been doing better lately, I’m happy to say!)

What does this research mean for patients cared for at Baystate?
In preparing this grant, I worked with Dr. Addie Seiler and the physicians at Pioneer Valley Accountable Care (PVAC) to understand the strategies they are using to reduce utilization and improve outcomes for their patients with HF. Although they have many programs in place, beneficiaries with HF enrolled in PVAC were still among the highest utilizers in the ACO, accounting for nearly half of the total hospitalizations annually. I am optimistic that through this project, we will identify innovative approaches for keeping patients with heart failure healthy that we can apply in our own community.

Publication Spotlight:
Flow limitation/obstruction with recovery breath (FLOW) event for improved scoring of mild obstructive sleep apnea without electroencephalography


We interviewed Karin Johnson MD, Associate Professor of Neurology at UMMS-B and IHDPS Fellow about her recent paper, which appeared in Sleep Medicine.

Karin, what was the motivation behind this study?
Obstructive sleep apnea (OSA) is a highly prevalent disorder and up to 35% of the population can meet polysomnographic criteria for mild OSA. Currently the severity of OSA is based only on the scoring of apneas and hypopneas which are defined by a change in the airflow and drops in oxygen levels or arousals. Most studies on OSA patients focus on moderate-severe OSA, but little is known about patients with mild OSA. Increasingly, patients with other conditions including stroke, hypertension, heart failure, and atrial fibrillation are being tested for OSA, leading to uncertainty about whether to treat patients with more mild disease. Additionally, many patients, especially women, present with atypical symptoms such as fatigue, headaches, and insomnia that make it difficult to determine which patients would benefit from treatment. There is increasing recognition among sleep medicine specialists that our current measure of the severity of OSA, the apnea hypopnea index (AHI), is insufficient in risk stratifying patients with OSA and predicting which patients will benefit from treatment. Most patients are also now being diagnosed with home sleep apnea testing, which is
Upcoming events

Weekly seminar, 12-1pm, MM5

May 1: Daniel Elliott, MD, MSCE
Christiana ACOs

May 8: Shannon Carson, MD
Deconstructing Clinical Trial Results in ICU Communication Through Cohort Studies, Secondary Analyses, and Qualitative Analysis

May 15: Office of Research’ Research & Education Celebration

May 22: No meeting

May 29: Mayuko Itofukanaga, MD, FCCP
Examining the Health and Healthcare Outcomes of Adults with Communication Disabilities in the National Health Interview Survey

June 5: Sarita Hudson, MTS; Sylvia Brandt, PhD; Paul Visintainer, PhD
Springfield Healthy Homes Asthma Project

June 12: Michelle Stransky, PhD, MA
Disability and health care outcomes

June 19: Mihaela Stefan, MD, PhD
Implementation of interprofessional training to improve uptake of noninvasive ventilation in patients hospitalized with severe COPD exacerbation

June 26: Karin Johnson, MD
Mild obstructive sleep apnea

For a full listing of events, see [here](#)

Unable to score arousals, causing further underestimation of the full burden of OSA. Several studies have found that about 20% of patients will have a normal home sleep apnea test that would be positive for OSA on an in-lab study, and about 20% of patients will be categorized as having mild OSA by home sleep apnea testing when they are actually moderate-severe. Our overall goal is to find new markers that can be used with either home or in-lab sleep apnea testing that will help clinicians make decisions about which patients will benefit from OSA treatment.

What were the main findings?
We defined a novel scoring event, Flow limitation/obstruction with recovery breath (FLOW), that can be scored with signals available from both home sleep apnea testing and in-lab polysomnography. We demonstrated that with a short training period, scoring can reliably be done; with intraclass correlation of 0.91 and the overall Kappa on two sets of 100 sample events at 0.84 and 0.87, demonstrating good agreement.

We compared FLOW to events associated with arousals that can be scored using EEG signal and found that it correlated with 80% of respiratory related arousals but only 8% of arousals that were not associated with respiratory events. 53% of FLOW events were independent of other events suggesting that it identifies obstructive changes beyond what would be categorized with the current AHI scoring criteria.

We are working on future studies to determine whether this Novel FLOW event and other sleep study markers available with home sleep apnea testing can better predict adverse outcomes associated with OSA and benefit with treatment than current AHI criteria.

How do the results apply to our patients at Baystate?
If the scoring of home sleep apnea testing can be improved, it can save patients both the inconvenience and cost of in-lab testing. Additionally, improved risk stratification of patients with OSA can help with medical decision making. This is especially important for home sleep apnea testing patients who fall within the normal-mild range based on the current criteria. For example, if I am seeing a patient who was referred to me to see if OSA is contributing to their atrial fibrillation or stroke risk, in the future, I may be able to assure one patient with mild OSA that they do not require treatment, and inform another patient that because of certain features, they are in a higher risk group and OSA treatment is important.

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**Basic Flow Limitation/Obstruction With recovery breath (FLOW) Definition**

Score FLOW if all the following criteria (A, B and C) are met:

A. Run of at least 2 breaths that have evidence of obstruction - either flow limitation or snoring

B. Must be followed by a distinct change in breathing pattern with increased amplitude, which we refer to as "recovery breath"

C. Meets distance criteria from other events

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For a full listing of events, see [here](#)
Hypertension (high blood pressure) is a major risk factor for many life-threatening conditions including heart attack, stroke, heart failure, kidney failure, and kidney failure. The prevalence of high blood pressure increases with age: for all adults age 55, the lifetime risk of developing hypertension is 90%. However, the risk of developing hypertension also differs by race and ethnicity. In Massachusetts, 28.6% of adults surveyed in 2018 reported that they had been told by a healthcare professional that they have high blood pressure. Like findings across the US, Massachusetts residents were more likely to have hypertension based on specific risk factors (African-American individuals, men, those with lower educational levels, lower income, or living in an urban area).

The CDC reports that in Springfield, 32% of respondents have been told by a healthcare provider that they have hypertension, with significant variability by census tract. Within the nearly 125,000 patients seen in Baystate Medical Practices primary care sites in the Pioneer Valley, approximately 22% have been diagnosed with hypertension. The practices maintain a registry of all patients with hypertension with efforts at outreach and education to maintain contact with patients and improve BP control. For many of our patients, we report BP control numbers to payers annually as part of quality program in value-based care contracts. Presently, 64% of the patients in our practices with hypertension have achieve adequate control (BP less than 149/90).
However, as noted in the bar chart, BP control among our patients varies by sex, race, ethnicity, and insurance coverage. Moreover, we see significant geographic variation, with worse BP control in urban areas (see map), consistent with national trends. In addition to ongoing outreach efforts, in 2019, the BMP primary care providers will begin to participate in an AMA-sponsored program known as “Target: BP,” which provides evidence-based training and assistance for our practices to achieve measurable improvements in BP control in our community.

Recent IHDPS Publications: Feb-Mar


