

# Population and Quantitative Health Sciences

State of the Department:  
Celebrating our Faculty, Staff, Students, and Work

Jeroan Allison  
Sharina Person

September 23, 2019



# Preparing this presentation provided the opportunity for me to:

- Meet with faculty, staff, and students to get to know them and their work better
- Gain a deeper appreciation of our work at the interface of leading-edge science and health equity
- Reflect on the unwavering support of the UMass leadership for our work
- Grapple with an “embarrassment of riches”

The vision and leadership of Chancellor Collins, and especially his strong emphasis on health equity and community engagement, resonate and animate our most deeply held values in the Department of Population and Quantitative Health Sciences.

UMASS MEDICAL SCHOOL STRATEGIC PLAN

>>> IMPACT

MOVING FORWARD

2025 >>>

The vision, support, and leadership of Dean Flotte have been transformative forces, enabling the Department of Population and Quantitative Health Sciences to flourish through the years.

# State of PQHS 2019

## Celebration of our faculty, staff, and students

- Overview and metrics
- Department-wide highlights
- Strategic planning
- Spotlight on Polakoff Program and IDIQ mechanism
- 4<sup>th</sup> Annual Melvin Cutler Lecture
- Posters, networking, and fellowship

Spoiler Alert: We're doing well!

Spoiler Alert: Lot's of exciting stuff!

Spoiler Alert: It's real!

Spoiler Alert: It's cool and may open new doors!

Spoiler Alert: This scientist has moved the health equity needle!

Spoiler Alert: A good time will be had be all!

The mission of PQHS is to advance science, population health, and quality of life by growing a learning and collaborating community of scientists and practitioners to:

- Create relevant knowledge
- Invent methods, interventions, and technologies
- Evaluate strategies for implementing, sustaining, and disseminating proven approaches

# Our purpose flows from deeply held values

- Science that makes a difference
- Health equity and social justice
- Lifelong learning that supports growth for all
- Collective creativity through collaboration and engagement
- Diversity as a driver of scientific inquiry and excellence



[UMass Med Now](#) > [UMass Medical School ranks in top 25 percent of medical schools in NIH funding](#)

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## UMass Medical School ranks in top 25 percent of medical schools in NIH funding

UMass Medical School Communications

March 22, 2019

UMass Medical School ranked 34th out of 147 U.S. medical schools in National Institutes of Health funding and 14th among public medical schools, according to the 2018 report from the Blue Ridge Institute for Medical Research. UMMS received \$159.6 million in NIH funds in 2018, up from \$153 million in 2017.

Overall research funding from all sources at UMMS is \$252 million.



PQHS ranked #3  
among similar  
departments  
across the nation!

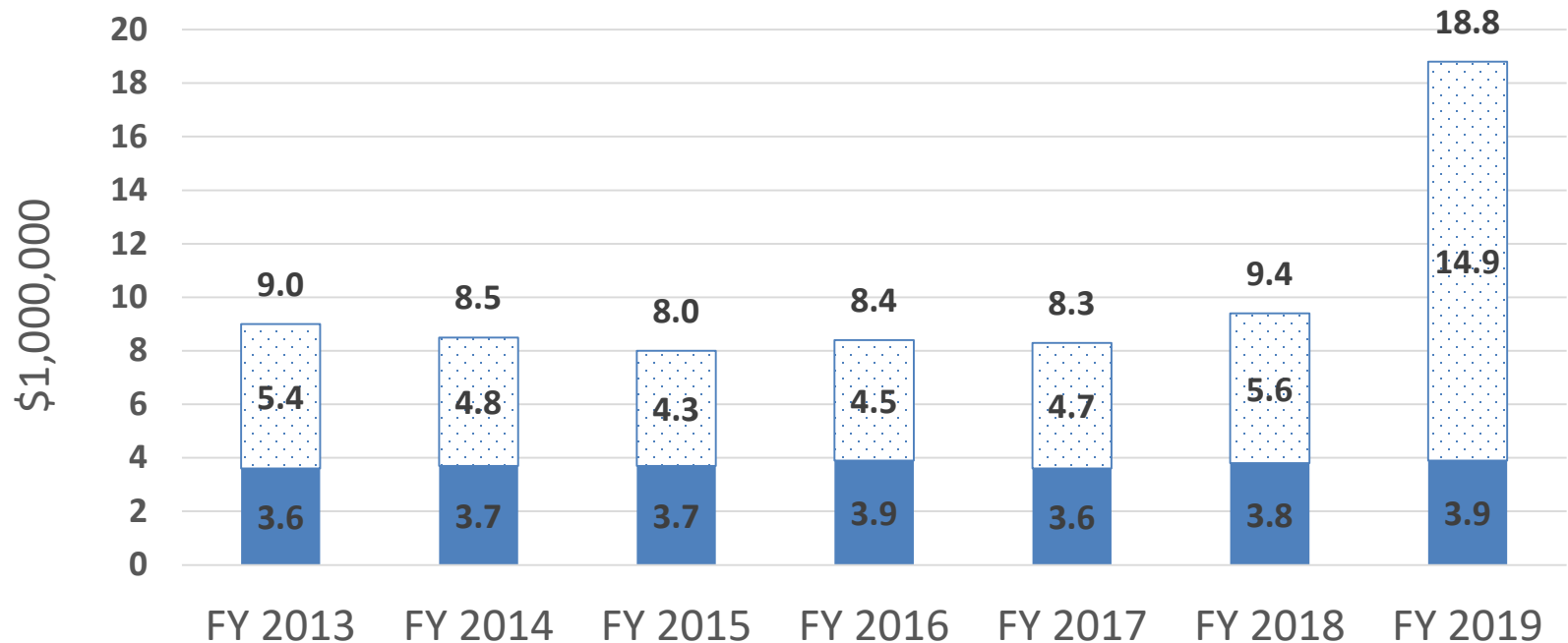
# PQHS has a robust portfolio of sponsored projects, all dedicated to its core mission.

Sponsored Projects <sup>1</sup>	Total Award \$	n
Active	\$62,937,886	75
Cumulative	\$104,559,222	162
<b>Total</b>	<b>167,197,108</b>	<b>237</b>
Pending <sup>2</sup>	\$27,309,186	13

<sup>1</sup>Only projects for which PQHS investigator is PI or Multi-PI

<sup>2</sup>Since “going to press,” 3 of these have been funded.

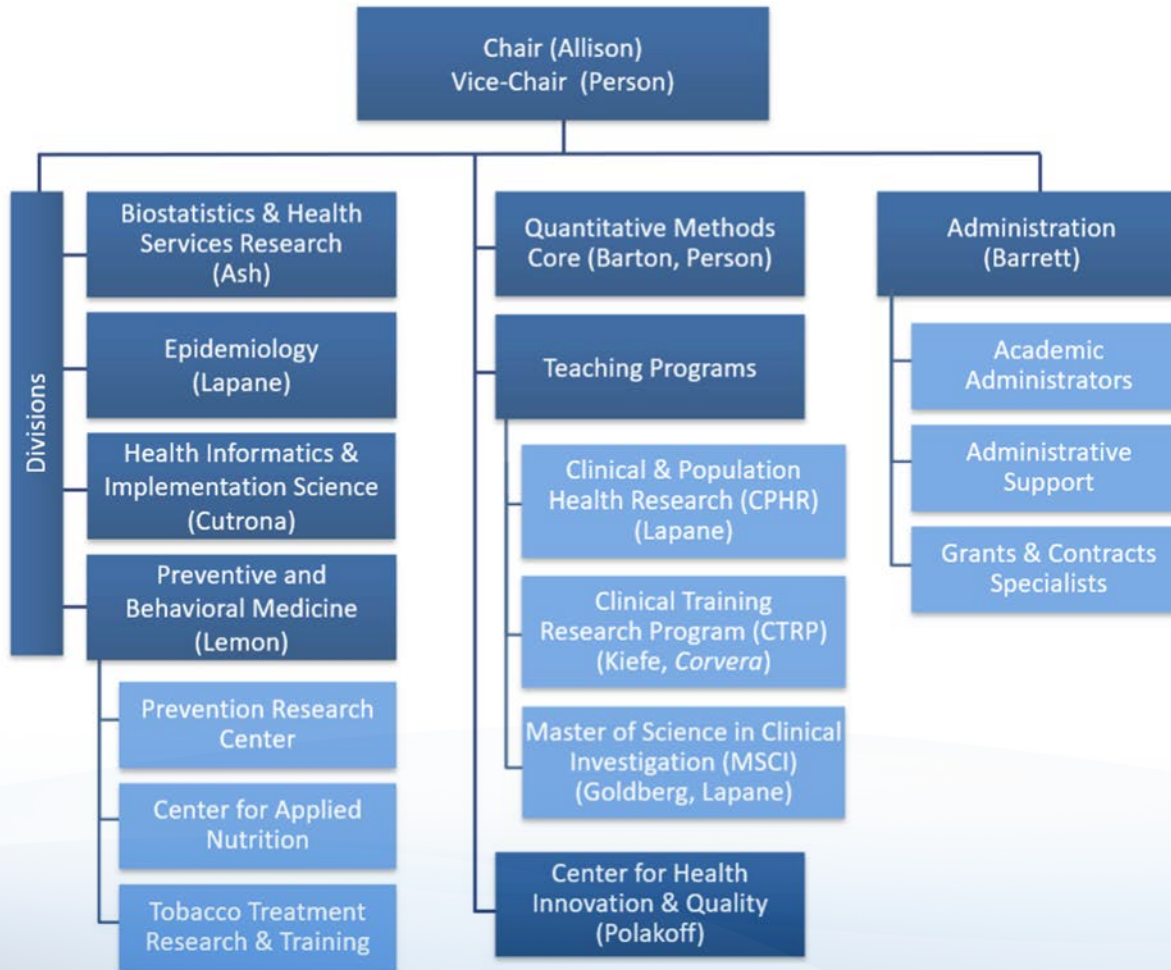
# PQHS offers great value on financial investment, even by the most conservative estimation.



■ Sponsored expenditures (Direct only)

■ Non-sponsored expenditures (e.g., Start-up Funds, Research Trust Funds, State Allocation)

PQHS organizational chart shows the structure we have developed to best support our work.



# Our people are the “heart and soul” of PQHS.

- 40 primary faculty
- 36 secondary faculty
- 32 voluntary or adjunct faculty
- 16 doctoral students, 7 post-docs
- 79 staff
  - 14 administrative
  - 65 research

# Staff are the glue that holds us together.

- 14 administrative staff
  - PQHS administrator: Joyce Barrett
  - 6 financial: O'Reilly, Thompson, Yeboah, Desai, Holden, McNally
  - 7 other: Baron, Falla, Manning, McDonald, Raymond, Saber, Stankus
- 65 research staff
  - Quantitative Methods Core technical staff
    - Statistical computing: Ayturk, Bhatia, Flahive, Frisard, Lessard, Min, Morrison, Olatian, Williams
    - Data management: Lazar, Netherton, Orvek, Rosenberg, Rumbut
  - 51 project managers, research associates, specialists, coordinators, assistants

# Department highlights showcase selected achievements.

- Preventive and Behavioral Medicine
- Health Informatics and Implementation Science
- Epidemiology
- Biostatistics and Health Services Research
- Education Programs

The Division of Preventive and Behavioral Medicine has a mission “to improve clinical and public health practice and policy through innovative and sustainable education, research, and service in preventive and behavioral medicine.”



# The PBM story focuses on:

- Sustained excellence in the areas such as diet, physical activity and weight loss; tobacco cessation; mind-body medicine; chronic disease management
- A well-established, exceptional staff and seasoned, productive faculty
- Rich history of research, training, clinical work and service
- Centers dedicated to research, training, technical assistance and clinical work: Centers for Tobacco Treatment Research and Training, Center for Applied Nutrition, UMass Worcester Prevention Research Center



# Examples of new PBM research grants/centers

- UMass Worcester Prevention Research Center refunded (Lemon and Rosal PIs)
  - Core project: Economic analysis of a community health worker-delivered intervention to enhance antihypertensive medication adherence in an ACO
- CDC Physical Activity Policy Research Network Coordinating Center (Lemon PIs)
- Advancing Medication Adherence for Latinos with hypertension through a Team-based Approach (ALTA) (Rosal)
- The MELODY trial: Modulating Early Life Microbiome through Perinatal Diet in Crohn's Disease (Olendzki and Maldonado-Contreras PIs)
- PR-OUTLOOK: PR Young Adults' Stress, Contextual, Behavioral & Cardimetabolic Risk (Rosal PI)



# Examples of new PBM contracts

- Racial and Ethnic Approaches to Community Health (REACH) Evaluation: City of Worcester/CDC (Lemon, Rosal and PRC team)
  - Focus on improving food systems and access among Worcester area Latinos
- Vaping Cessation Initiative: Mass DPH/Natick Health Department (Pbert and CTTRT team)
- Evaluation of Breast Cancer Navigation Programs: American Cancer Society (Lemon)

# Examples of past year PBM training, education and mentorship accomplishments

- Milagros Rosal leads new institutional KL2 diversity scholars program
- NCI-funded PRACCTIS T32 refunded
  - Currently supports 3 post-docs in PQHS and Emergency Medicine, recruiting 1 post-doc and 1 CPHR pre-doc
- NHLBI-funded K12 program continues
  - Currently supports 5 junior faculty in PQHS, Medicine, Baystate and the VA
- CTTTRT trained 613 people in 33 states, Puerto Rico, Mexico and Saudi Arabia
- Primary mentorship to more than 30 trainees at various career stages

# Examples of PBM impact through service

- Lori Pbert named to US Preventive Services Task Force
- Judy Ockene serves on Worcester Commission on the Status of Women and YWCA Racial Justice Task Force
- Karin Goins co-founded Walk Bike Worcester
- Amy Borg serves on Worcester Food Policy Council
- Barbara Olendzki serves on Massachusetts Food is Medicine Coalition

The Division of Health Informatics and Implementation Sciences focuses on patient-facing and provider-facing informatics interventions and the study of effective implementation strategies.

# The HHS story focuses on:

- The success of junior faculty and trainees
- A rising and established core of mid-career faculty
- Strong collaborative ties within our institution, nationally, and internationally

# HIIS work of early-career investigators

- New career development awards
  - Daniel Amante, PhD, MPH: Behavioral economics for improving engagement for diabetes education
  - Jinying Chen, PhD: Large data techniques to understand and prevent avoidable readmission
  - Mayuko Ito Fukunaga, MD, FCCP: Mobile health approaches that leverage big data to promote lung cancer screening
- Intramurally funded work with great potential
  - Adarsha Bajracharya, MD: Engaged in operational/QI informatics work with direct patient-care impact
  - Feifan Liu, PhD: Engaged in Medical Visual Question Answering Project (MedVQA) collaboration with Radiology



# Exciting research programs of mid-career faculty

- Sarah Cutrona, MD, MPH
  - VA multi site studies focused on “embedded research”
  - Expertise in HTN care and patient EHR engagement
- Rajani Sadasivam, PhD
  - Crowd sourcing and collective intelligence for design and delivery of health messages
  - Expertise in smoking cessation, nationally and internationally
- Kristin Mattocks, PhD, MPH
  - 15 site COMFORT study for VA pregnant and post-partum veterans
  - Service-Directed Research Center grant for VA Community Care
  - Establishing Qualitative Consults Service in PQHS

[UMass Med Now](#) > Jomol Mathew named UMMS chief research informatics officer

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## Jomol Mathew named UMMS chief research informatics officer

UMass Medical School Communications

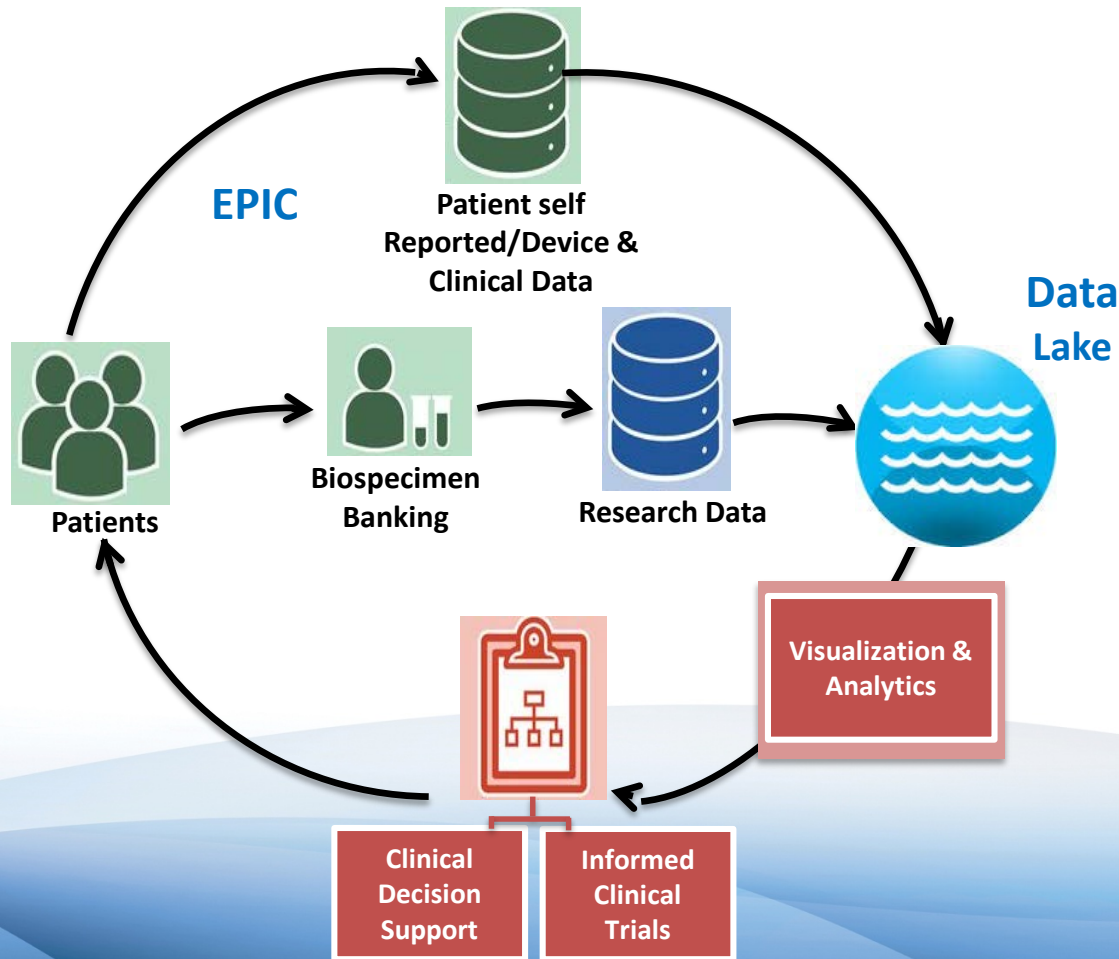
September 12, 2018

Jomol Mathew, PhD, has been appointed chief research informatics officer for UMass Medical School, according to an announcement from Katherine Luzuriaga, MD, the *UMass Memorial Health Care Chair in Biomedical Research*; professor of molecular medicine, pediatrics and medicine; and vice provost of clinical and translational research; and Gregory Wolf, chief information officer.



*Jomol Mathew, PhD*

# The vision of Dr. Mathew's position is to build an Integrated Clinical and Research Data Ecosystem



- Enable data driven research
- Enable translation of research findings to clinical care
- Make a difference in community and global health

Clinical Trials Management System

# HIIS transitions are creating new possibilities.

- Thomas Houston, MD, MPH
  - Founding director who created vibrant division
  - Vice Chair for Learning Health Systems, Wake Forest
  - New multi-site collaborations, e.g., NCI P50 Center
- Sarah Cutrona, MD, MPH
  - Highly accomplished implementation scientist
  - Large portfolio of VA investigator initiated funding
  - Highly valued leadership in new role as interim division director
- High-profile search for new division director

The mission of the Division of Epidemiology is to improve population health by advancing knowledge of the causes and prevention of disease and by training epidemiologists in state-of-the-science methods for observational research.

# With a new name, the division is growing.

- New faculty
  - Sarah Forrester (Social epidemiology)
  - Tony Nunes (Comparative effectiveness)
- New post-docs
  - Reynolds Morrison
  - Matt Harkey
- New Staff
  - Lynley Rapport
  - Kayli Anderson
  - Venessa Duodu

# The Division of Epidemiology is highly engaged in the educational mission.

- Faculty teaching 8-10 classes per year spanning spectrum of education
- Currently provide primary mentorship for 8 students, ranging from a high-school senior to MD/PhD student
- Substantial contribution through training grants: Lead --- (Postbaccalaureate Research Education Program (PREP), NIH Initiative for Maximizing Student Development (IMSD), TL1; Collaborative --- (CVD T32, NCI T32, MSTP)
- Important service contributions
  - Lapane/Jesdale engaged in DRIVE effort to create a bias-free curriculum
  - Dube/Lapane administrative supplement to increase Rigor and Reproducibility in MD/PhD Curriculum

# Faculty in the Division of Epidemiology are frequently recognized for their contributions.

- Shao-Hsien Lieu: SPARTAN Young Investigator Pilot Award; Recognition by Editor of J Rhum for top article
- Jennifer Tjia: Fellow of Academy of Hospice and Palliative Care
- Christine Ulbricht: UMass Faculty Award for Outstanding Curricular Development; Rising Star, McKnight's Long-Term Care News Women of Distinction Awards



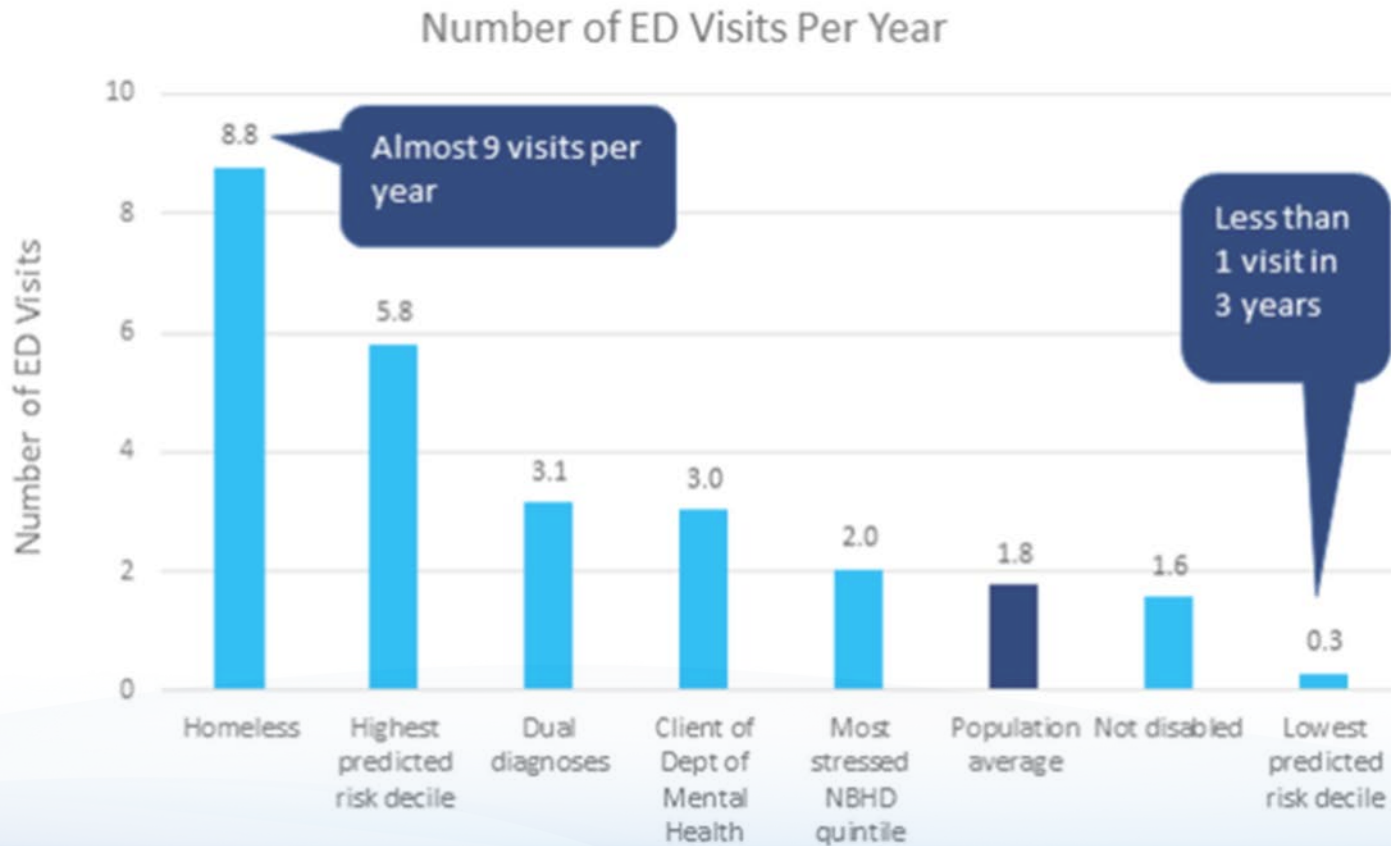
# The Division of Epidemiology engages in highly collaborative work, drawing synergy from trainee talent.

- Continued research themes
  - Health disparities
  - Pharmacoepidemiology
  - Health care utilization
  - Disease specific: Osteoarthritis, cardiovascular disease, depression
- New areas of funded research
  - Spondylarthritis
  - Alzheimer's disease and social isolation in nursing homes
  - Serious mental illness among working-age adults in nursing homes
- Robust publication record
  - N = 55 in 2019
  - 50% with trainees

The mission of the Division of Biostatistics and Health Services Research is to deploy statistical expertise in the service of scientific discovery, population health, and health equity.

# Complex patients have more emergency visits: Don't punish their providers

Mick E, Alcusky M, Li NC, Eanet F, Allison J, Kiefe C, Ash A



# Bo Wang

- Specialized expertise in state-of-the art study design (Multiphase Optimization Strategy --- MOST/Sequential, multiple assignment, randomized trials --- SMART)
- National Implementation of Focus on Youth in the Caribbean: Implementation Strategies and Improved Outcomes



Chan Zhou, Ph.D. Tenure-track  
Assistant Professor at UMass Medical  
School, since June 23, 2019.



*Postdoc positions are available :*  
<https://scholar.harvard.edu/zhouchan/positions>  
Email: chan DOT zhou AT umassmed DOT edu

Home Positions Bio Publications Software Links

# The ZHOU Lab at UMASS MEDICAL SCHOOL Computational EpiGenomics



		$p(x_1 x_2 \dots x_K) = \frac{f(x_1 x_2 \dots x_K)}{(L - K + 1)}$	<p><b>Develop computational methods, statistical and mathematical models and analyze big data to uncover noncoding epigenomics for precision medicine</b></p>
		<p>Biomedical Informatics</p>	

# The Quantitative Methods Core led by Dr. Barton is central to our department's mission.

- Consults from 05/2010: 1950
- Investigators: 650
- Departments: All UMMS
- Commitments to Departments:
  - Psychiatry/iSPARC
  - Pediatrics
  - CHPR (Comm Med)
  - Orthopedics/FORCE TJR (pending)
  - VA
  - Tufts Vet School
- Based on fiscally responsible model

Dr. Jonggyu Beck is making methodological advances in geospatial analysis.

ORIGINAL ARTICLE

(*Epidemiology* 2017;28: 403–411)

Statistical Methods to Study Variation in Associations  
Between Food Store Availability and Body Mass in the  
Multi-Ethnic Study of Atherosclerosis

Jonggyu Baek,<sup>a</sup> Jana A. Hirsch,<sup>b</sup> Kari Moore,<sup>c</sup> Loni Philip Tabb,<sup>c</sup> Tonatiuh Barrientos-Gutierrez,<sup>d</sup>  
Lynda D. Lisabeth,<sup>a</sup> Ana V. Diez-Roux,<sup>c</sup> and Brisa N. Sánchez<sup>a</sup>



American Journal of  
Public Health  
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Practice of Epidemiology

Hierarchical Distributed-Lag Models: Exploring Variation in  
Magnitude in Associations Between the Built Environment and Health

Jonggyu Baek, Emma V. Sanchez-Vaznaugh, and Brisa N. Sánchez\*

\* Correspondence to Dr. Brisa N. Sánchez, Department of Biostatistics, SPH II, Room 4164, School of Public Health, University of Michigan, 1415 Washington Heights, Ann Arbor, MI 48109-2029 (e-mail: brisa@umich.edu).

Initially submitted January 6, 2015; accepted for publication August 24, 2015.

“Education is the most powerful weapon which you can use to change the world.” *Nelson Mandela*





# 2019 CPHR PhD Graduates

- Hawa Abu (Post-doc, UMass Cardiology)
- Karen Ashe (Position in private sector)
- Matt Alcusky (Assist. Prof., Division of Epi)
- Karen Ashe (Position in private sector)
- Ganga Bey (T32 post-doc, UNC Chapel Hill)
- Rebecca Kinney (Research Health Scientist VA Central Western Massachusetts)
- Aimee Kroll Desrosiers (Research Health Scientist VA Central Western Massachusetts)
- Andrea Lopez (T32 post-doc, Harvard)
- Hoang Tran (Internal Medicine Resident, Bridgeport CT)

# New Doctoral Students

- PhD
  - Qiaoxi “Tracy” Chen
  - Katarina Ferrucci
  - Melissa Goulding
  
- MD/PhD students
  - Julie Hugunin
  - Zachary Dyer

# New dissertation grants by students

- Eric Ding, MS (NHLBI F30 Feasibility of Smartwatches for Atrial Fibrillation Detection in Older Adults)
- Deborah Mack, MPH (Use and safety of statins among nursing home residents with life-limiting illness in the United States (AHRQ R36 Dissertation Grant; Mentor: Lapane)

# Institutional training grants

- New
  - NCI T32 in Implementation Science, pre/post doc (PI: Lemon)
  - NHLBI K12 Implementation Science (PI: Lemon)
  - MSTP Supplement for Curriculum Development (Multi-PIs: Lapane/Dube)
  - Fogarty D43 Vietnam Training Grant (PI: Allison)
- Ongoing
  - PREP (Multi-PIs: Lapane/Lewis)
- Pending
  - CVD T32 pre/post doc (MPI: Kiefe/Freedman)
  - IMSD (MPI: Lapane/Lewis)
  - CTSA KL2 (Multi-PIs: Kiefe/Lindenauer/McCormick)
  - CTSA TL1 pre/post doc (PI: Lapane)

Employee	Years Service
Druker, Susan	25
Estabrook, Barbara	25
Kamberi, Ariana	20
Borg, Amy	15
Manning, Sandra	15
Allison, Jeroan	10
Ash, Arlene	10
Flahive, Julie	10
Kiefe, Catarina	10
Netherton, Dane	10
Polakoff, David	10
Posner, Heather	10
Sadasivam, Rajani	10
Chen, Jinying	5
Cranos, Caroline	5

The leadership of Dr. Sharina Person as Vice Chair engages all our faculty and staff in a meaningful bidirectional communication and keeps our department on a strong financial and operational footing.

# PQHS Strategic Planning Process

- Deep listening and data gathering
- Strategy map vetted and refined
- Workgroup consisting of faculty and staff formed for each goal
- Workgroup returns actionable items
  - Accountability
  - Ongoing assessment

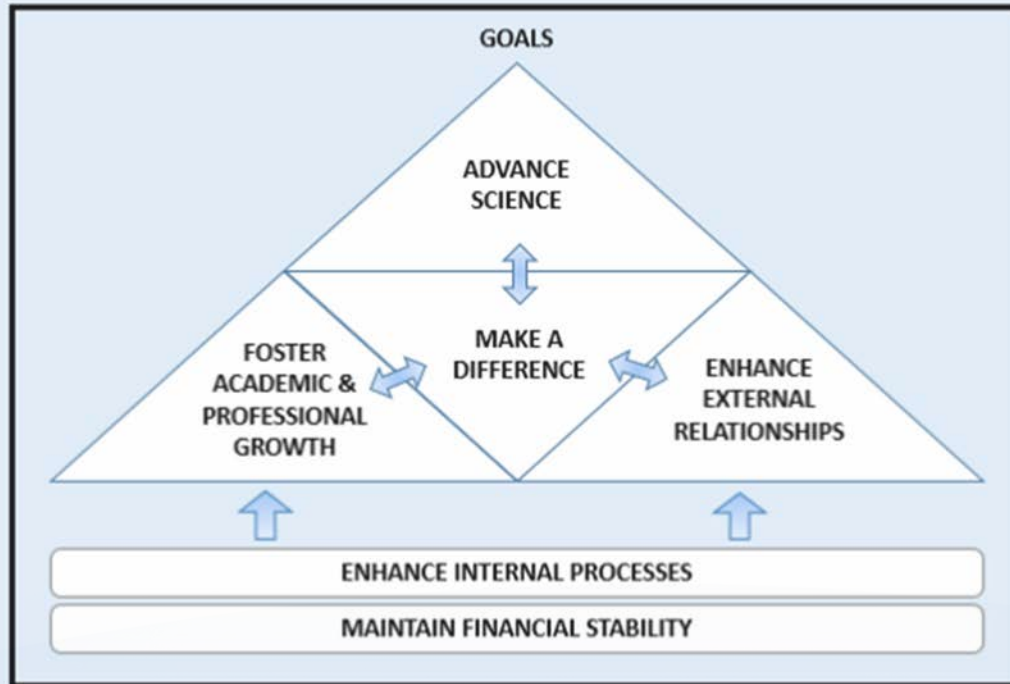
## VISION

Best health and well-being for all through science, community-engagement, and education

## MISSION

To advance science and improve population health, we will grow a learning community of scientists and practitioners and collaborate with others (in our institution, our community and beyond) to:

- Create health relevant knowledge
- Invent methods, interventions, and technologies
- Evaluate strategies for implementing, sustaining, and disseminating proven approaches



## VALUES

- Science that makes a difference
- Health equity and social justice
- Lifelong learning that supports growth for all
- Collective creativity through collaboration and engagement
- Diversity as a driver of scientific inquiry and excellence

The PQHS Strategy Map guides our investment of resources.



# Research Capacity

- Focus on early-stage investigators and large, cross-cutting program projects
- Pilot project program
- Barret J. Olson-Zimmermann, Senior Project Director, a PQHS-wide resource

# Professional Development for Staff

- Open Papers
  - Unprecedented opportunities for participation in authoring manuscripts
  - Electronic bulletin board of emerging papers
  - Pilot by Kate Lapane
- Staff Development Fund
  - 1 -2 opportunities each year
  - Formal application process and committee review

# Departmental Communication Plan

- RFP for competitive bidding working with Office of Communication based on input from all working groups
- Systematic approach within department and beyond
  - Individual faculty
  - Division
  - Department
- Focus areas
  - Social Media
  - Internet presence
  - Internal communication
  - Briefs in lay language (policy makers, community feedback)
  - Resource guide as living document with names, faces, and links
- Invaluable for branding and showcasing our work
  - New recruitment
  - Building external relationships
  - Improved decision making

# Grants Management

- New Grant Kick-Off Support
  - Convene broad-based departmental support team
  - Standardized protocols
  - SciENCv training and support
  - Piloted by PQHS Administrative Office for pre-award management
  
- New resources for post-award management
  - New hires: Mary McNally; Sharon Holden; Dhruvi Desai
  - Ongoing evaluation with additional resource investment in the future

# Faculty and Staff Engagement

- Open Forum with the Chair and Vice Chair
  - Twice yearly
  - Open agenda
  - Separate meetings
    - Faculty in early or mid career stages
    - Staff
  - Avoid “committee proliferation” yet provide opportunity for meaningful input bi-directional communication
- Lunch with Chair and Vice Chair
  - Monthly
  - On-campus with white table cloth and catered service
  - 2 slots for faculty and 2 slots for staff each month
  - Main goal: Get to know each other and have fun!



# CMS Transforming Clinical Practices Initiative and

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## The Southern New England Practice Transformation Network



**TCPi**

Transforming Clinical  
Practices Initiative



# Center for Medicare and Medicaid Innovation

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- Created by the Affordable Care Act
- Initially funded with \$20B
- Multiple rounds of Innovation Awards to test new care and payment models
- 2015 – announced the Transforming Clinical Practices Initiative (TCPI)
- Multi-award announcement, anticipated total \$680M over four years

# TCPi Aims

- 1** Support more than 140,000 clinicians in their practice transformation work
- 2** Improve health outcomes for millions of Medicare, Medicaid and CHIP beneficiaries and other patients
- 3** Reduce unnecessary hospitalizations for 5 million patients
- 4** Generate \$1 to \$4 billion in savings to the federal government and commercial payers
- 5** Sustain efficient care delivery by reducing unnecessary testing and procedures
- 6** Build the evidence base on practice transformation so that effective solutions can be scaled



# CMS Transforming Clinical Practices Initiative (TCPI)

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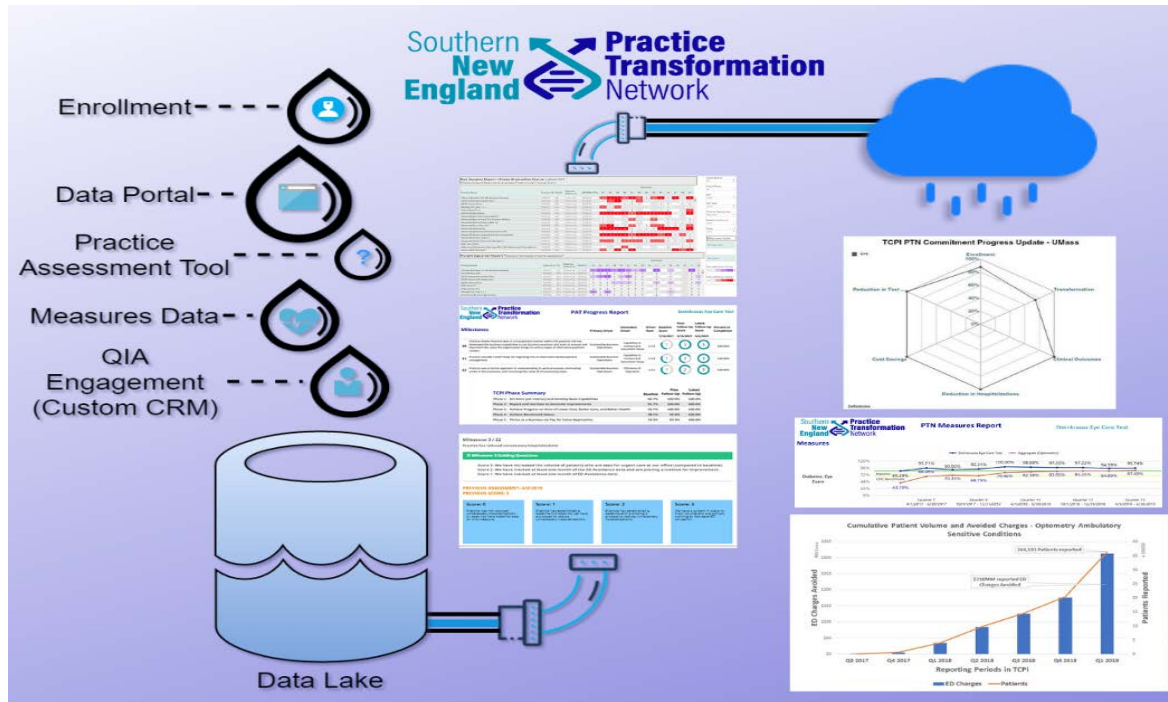
- 29 Awards
- UMMS awarded \$29M
- Sub-awardee – UConn School of Medicine
- Territory MA and CT
- Committed enrollment: 5400 clinicians
- Committed cost-savings: \$59M

# Challenges & Solutions

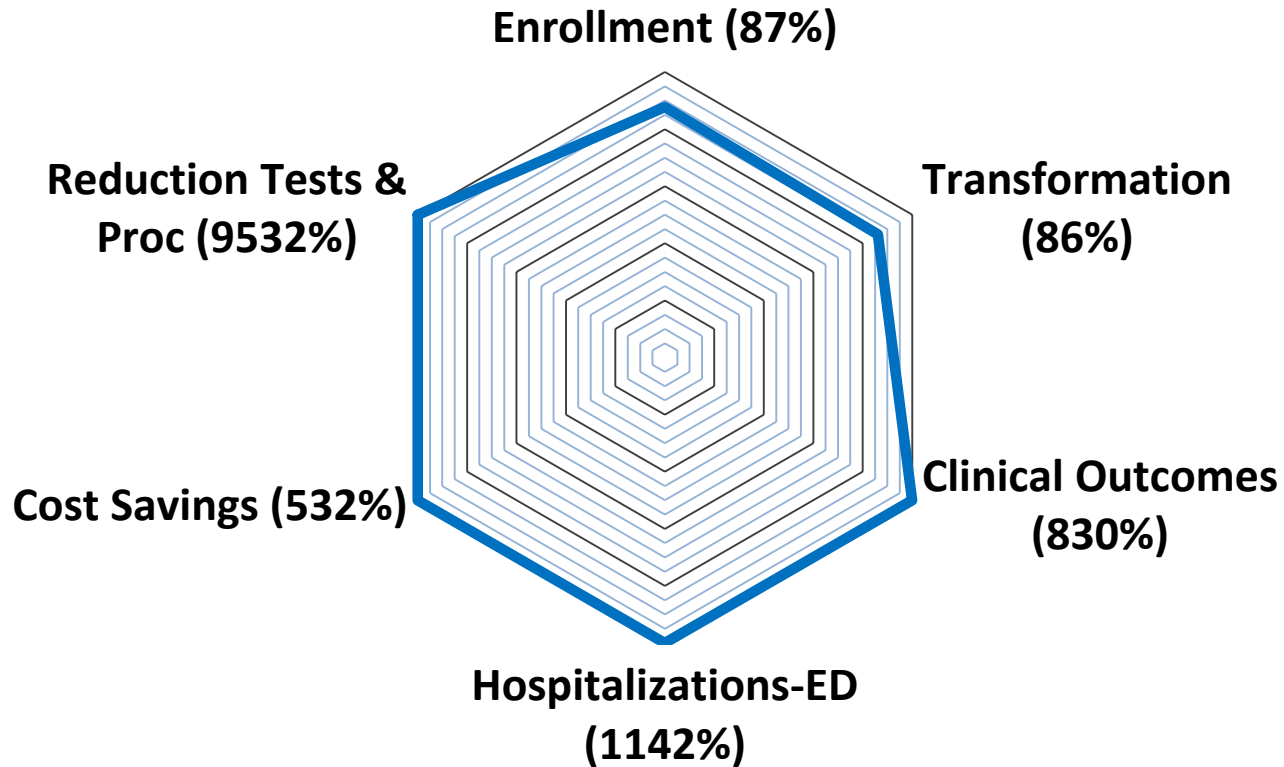
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- Clinicians enrolled in ACOs excluded
- By late 2015, ACOs had become ubiquitous in MA
- Most physicians in MA ineligible
- Many professions and disciplines eligible
- Solution: enrolled >4000 optometrists who were part of a single, national IPA

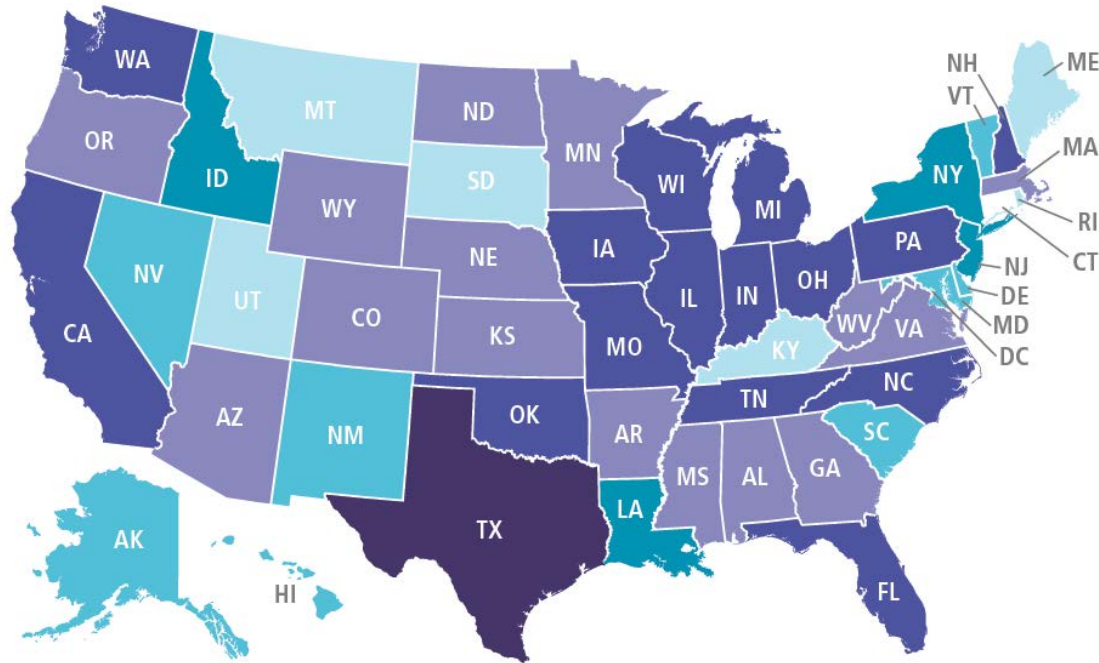
# Innovations and New Methods



# SNEPTN Results



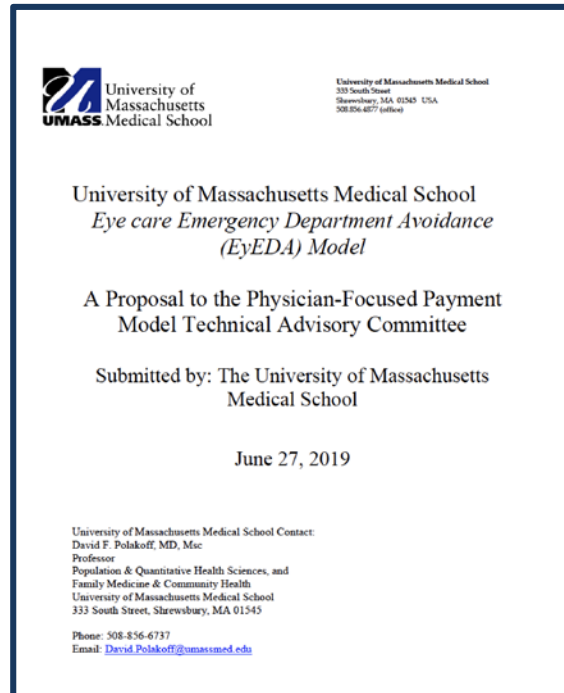
# Aim 3: ED Avoidance: 381,008 Visits



# Aim 5: Generating Cost Savings for Payers



...and a 7<sup>th</sup> Aim was added...



# Network of Quality Improvement and Innovation Contractors (NQIQ)

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- RFP released March 2018
- Merges *all* CMS-funded quality improvement work into a single contract vehicle
- 5 year duration + 5 year option
- Maximum obligation \$25 billion
- 200 proposals received → 59 awards
- UMMS received an award January 2019



# Network of Quality Improvement and Innovation Contractors (NQIQ)

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- Two task orders released to date
- UMMS proposed for Task Order 2: Clinician Quality Improvement Contract (outpatient-focused) with 3 outstanding partners
- Primary Territory: 6 New England States
- Proposal submitted August, 2019
- Focus areas
  - Behavioral Health and Substance Use Disorder Outcomes
  - Chronic Disease Management
  - Reduction of All-Cause Harms
  - Improved Transitions of Care

# A New Funding Model

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- Federal research grants
- Foundation grants
- Industry contracts
- Cooperative agreements
- Philanthropy
- **Indefinite Delivery/Indefinite Quantity (ID/IQ) contracts**

## Indefinite Delivery/Indefinite Quantity Contracts (ID/IQ)

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IDIQs are often multiple-award contracts, and have become quite popular in recent years. Using an IDIQ allows the government to select several possible vendors for an agency to rely on, then ask that small group of vendors to bid against one another to complete each separate task; giving the government a competitive price for each task without initiating a new contract competition and all that it would demand of contracting officers. For industry, however, this can make winning a position on an IDIQ contract essential. It is just so easy for an agency to purchase through its IDIQs that it may rarely purchase outside of them.