

The State of the Department of Quantitative Health Sciences (QHS) at 6 years of age

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State of QHS 2015: Overview

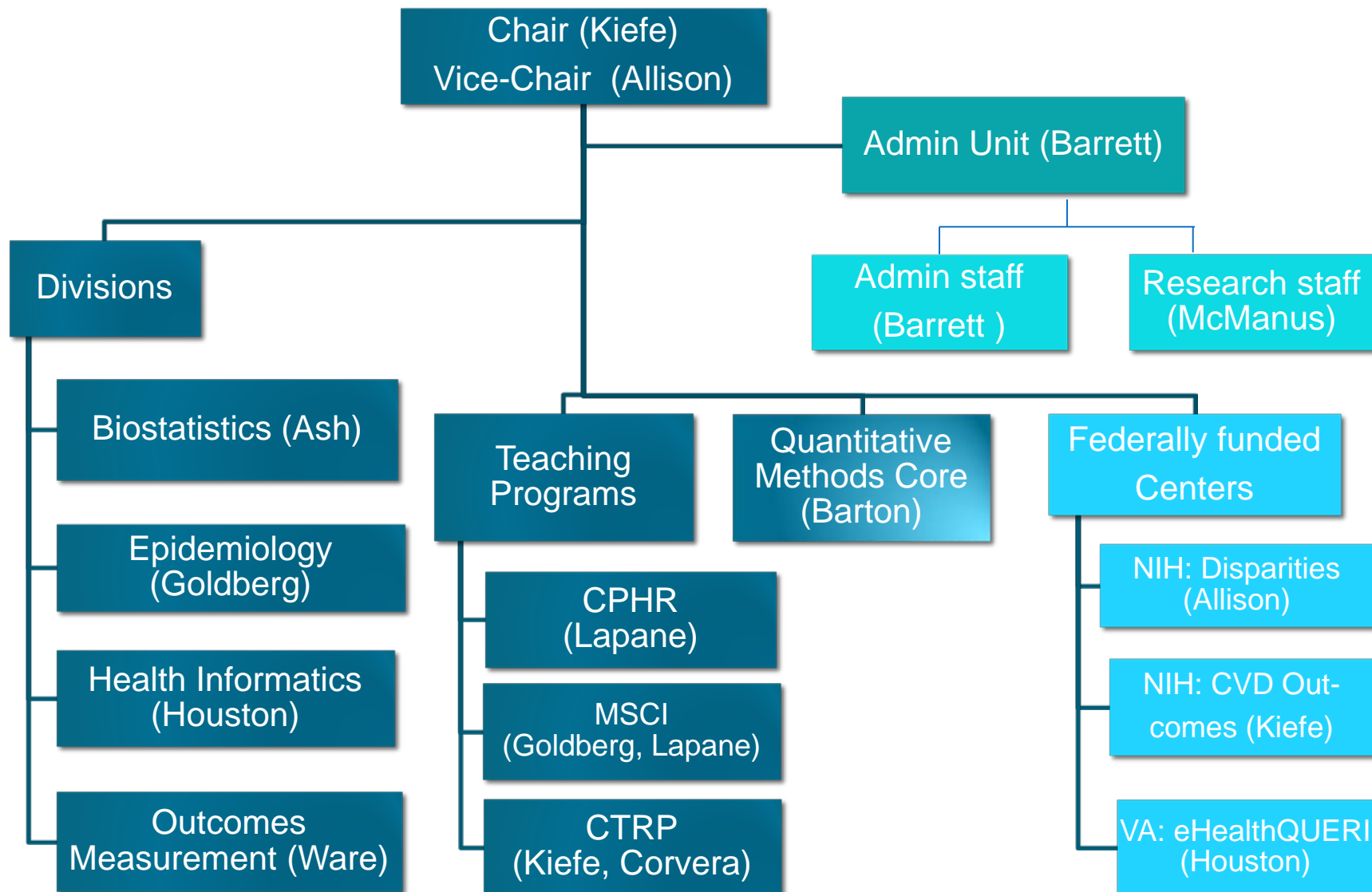
- Brief history and department overview
- Research Highlights
 - Funding
 - Publications
- Highlights from educational programs
- Highlights from QMC
- Challenges for FY 16



QHS History

- Founded in June, 2009
- Strategic Plan developed by June, 2010
 - Revised June, 2012; September 2014
- People:
 - 38 primary faculty, 24 secondary faculty
 - 21 doctoral students, 3 post-docs
 - 40 staff
- Moved into ~24,000 sq ft across 5 floors in new Sherman building, May 2013

Dept. of Quantitative Health Sciences Organizational Chart



QHS Vision

- We will be leaders in the science of moving from discovery to improving individual and population health
 - by transforming healthcare delivery through methodological innovation
 - by becoming a nationally and internationally recognized resource for translational research



QHS Values

- Social justice through improved health
- Collective creativity
- Integrity and excellence
- Diversity and mutual respect
- Science that makes a difference



Social justice, Collective creativity...



So – what do we actually do?

- Research: we discover
- Teach: all levels of students
- Scientific Service: consultants and facilitators for research across campus, nationally, and internationally



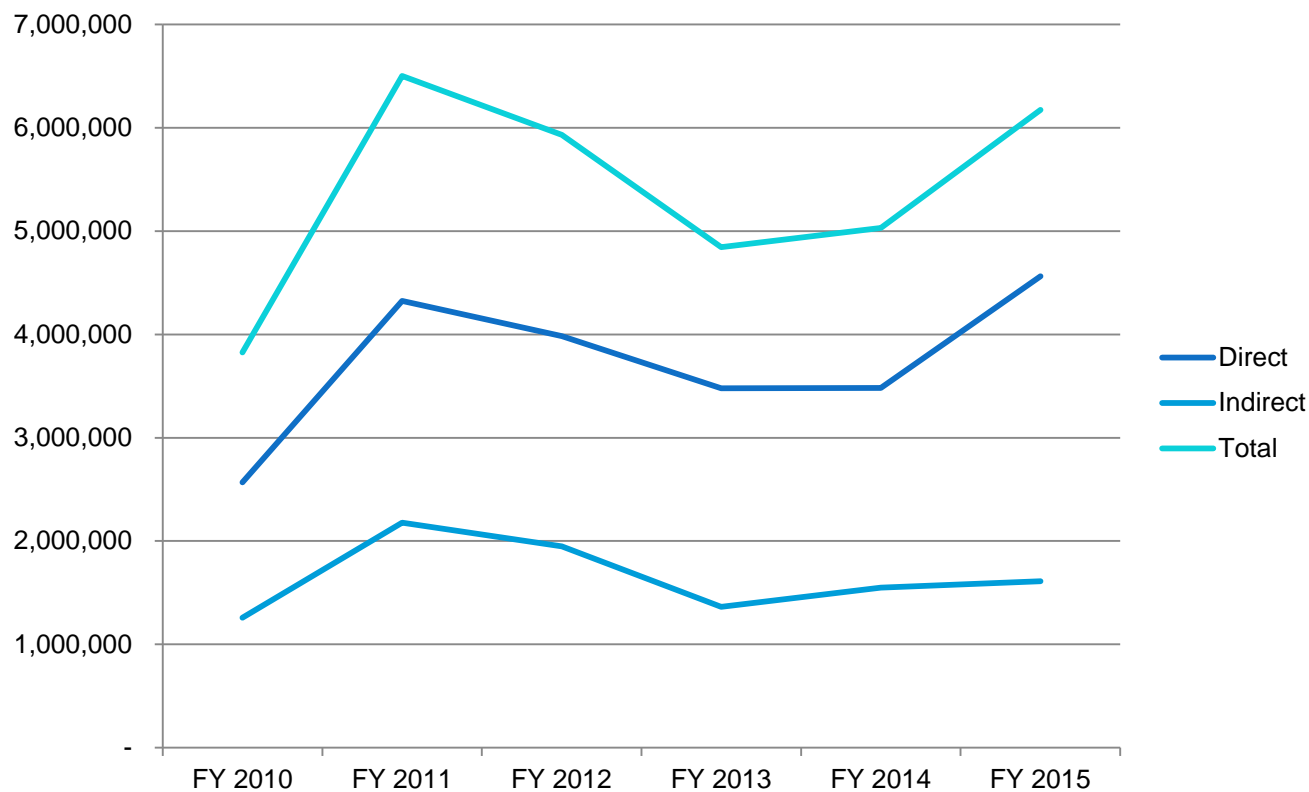
Research Portfolio

- Since its inception, QHS faculty have been PIs on 70 extramurally funded projects, over \$50 million total
 - 29 currently active,
 - In FY15 alone, total annual funding \$6,171,287 in UMass-based grants with QHS PIs
 - Also, VA grants of over \$8 million
 - Also, other grants for which QHS faculty have been key
 - CTSA, Joint Replacement Registry, CDC pregnancy and depression...
- Estimated grant funding impact of QHS on UMMS > \$100 million

Univ of Massachusetts Center for Clinical and Translational Science (UMCCTS): the UMass instantiation of a CTSA

- Funded by NIH in 2010 @ \$4 million/yr, just competitively renewed for 4 years
- QHS leads 3 core components:
 - BERD (statistics and research design)
 - Informatics Core
 - Special Populations Resource Center
- New T32 co-lead by QHS (Lapane) added this year, extending our educational presence (MSCI, CTRP)
- QHS (Allison) new co-leader of KL2

QHS sponsored project funding, by fiscal year: FY10 – FY15



QHS FY15 Budget and Sources

- Annual FY 15 expenditures ~\$7.5 million
- Base state allocation to QHS 16%
- Grant direct funding 57%
- Other sources: indirect cost recovery, teaching, QMC billing, endowments

Nature (and grant funding) has its up and downs...



Landmark Accomplishments in FY15

- 5 new faculty: Chrysanthopoulou, Gandek, Clark, Jarad, Ulbricht
- Submitted 32 new grant applications, of which 12 have been funded so far (success rate between 38% and a possible 71%, depending on those unknown)
- 64% of all QHS faculty salaries supported on grants
- Over 700 peer-reviewed publications by QHS faculty since 2010 (over 160 in FY15), some in very high profile journals

Featured QHS FY 15 publications

(in reverse chronological order)

- Byatt N, Levin L, Ziedonis D, **Allison JJ. Obstetrics & Gynecology**, In Press
- **Deng N, Anatchkova MD, Waring ME, Han TK, Ware JE Jr. Quality of Life Research. 2015.**
- **Hoaglin DC. Statistics in Medicine, 2015;**
- **Tjia J, Briesacher BA, Peterson D, Liu Q, Andrade SE, Mitchell SL. JAMA Intern Med. 2014**
- Chen H-Y, Lemon SC, Pagoto SL, **Barton BA, Lapane KL, Goldberg RJ. Prev Chronic Dis 2014;11:E132**
- Boudreaux ED, **Waring ME, Hayes RB, Sadasivam RS, Mullen S, Pagoto SL. Translational Behavioral Medicine. 2014;**

Byatt N, Levin L, Ziedonis D, **Allison JJ**. Depression in Outpatient Perinatal Care Settings Increase Mental Health Care Use? A Systematic Review. **Obstetrics & Gynecology**. In Press.

- **Highlights the lack of evidence-based interventions that are viable in low-resource and busy clinical settings for perinatal depression**
- Based on insights described in this article UMMS was recently competitively selected by the CDC to lead a multisite, cluster-randomized trial testing our innovative approach to treating perinatal depression.

Deng N, Anatchkova MD, Waring ME, Han TK, Ware JE Jr. Testing item response theory invariance of the standardized quality-of-life disease impact scale (QDIS[®]) in acute coronary syndrome patients: differential functioning of items and test. **Quality of Life Research**. Epub ahead of print: 20 Jan 2015

- **Confirmed a crucial psychometric assumption underlying the standardization of content and scoring for disease-specific QOL impact across diseases, which enabled the 1st norm-based summary measure for the chronically-ill US population.**
- Across-divisions, within-QHS collaborative effort

Tjia J, Briesacher BA, Peterson D, Liu Q, Andrade SE, Mitchell SL. Use of medications of questionable benefit in advanced dementia. *JAMA Intern Med.* 2014. 174(11): 1763-71

- **One of the first nationwide studies that addresses the understudied problem of medication appropriateness in patients with life-limiting illness**
- New and important area of clinical medicine
- Supports the “Choosing Wisely” Campaign that highlights the overuse of medical interventions

Chen H-Y, Lemon SC, Pagoto SL, **Barton BA**, **Lapane KL**, **Goldberg RJ**. Personal and parental weight misperception and self-reported attempted weight loss in US children and adolescents. *Prev Chronic Dis* 2014;11:E132

- **Accurate personal, but not parental, weight perception was positively associated with self-reported attempted weight loss among overweight and obese children and adolescents.**
- Published in the premier epidemiological journal
- Paper was led by a student during their first evaluation milestone – the comprehensive project.
- Received much attention in the lay press (including Good Morning America and other major media outlets).

Boudreaux ED, **Waring ME**, Hayes RB, **Sadasivam RS**, Mullen S, Pagoto SL. Evaluating and Selecting Mobile Health Apps: Strategies for Healthcare Providers and Healthcare Organizations. **Translational Behavioral Medicine**. 2014; 4(4): 363-371

- **Provides recommendations for researchers considering using existing mobile apps in their work**
- **Offers providers guidance on reviewing and selecting apps to recommend to their patients**
- Of articles published in TBM, was the 2nd most frequently discussed on social media and other online platforms in 2014

Hoaglin DC. Misunderstandings about Q and “Cochran’s Q test” in meta-analysis. **Statistics in Medicine**, EPub ahead of print 2015.

- **Corrects widespread misunderstandings about a popular test for heterogeneity in meta-analysis.**
- **Discusses problems of the popular measure I^2 and the DerSimonian-Laird method for random-effects meta-analysis.**
- Will appear as a Featured Article with invited discussion.

Heterogeneity can be good...



Other FY 15 Highlight : Supporting Payment and Care Delivery Reform in MassHealth

- Arlene Ash and Jianying (Ying) Zhang working with CWM to help the State develop a “bundled payment” methodology that appropriately accounts for the excess resource needs of people who are vulnerable due to “social determinants of health”
- Looking forward to more collaborations CWM as Melissa Clark comes on board

New Cross-Division Collaboration

- Health Informatics/Implementation and Biostatistics/HSR, joint meeting
 - Share knowledge of available data and what each group does with them
 - First meeting: Oct 6, 2-3pm, ASC9.2072
 - Others welcome

Collaboration???



QUANTITATIVE METHODS CORE

QHS' service unit

Bruce Barton, PhD – Director

Eric Mick, ScD - Associate Director

- 8 Faculty statisticians part-time
- 7 Technical staff full-time

QMC Activities: 5/2010 – 9/2015

- Official start – 5/1/2010
- Presented data as of 9/1/2015
- Initial project meetings: 1150+
- Initial investigator meetings: 557
- Over last year, about 60% of new projects are with “repeat” investigators
- Departments involved: 28 (all of UMMS)
- Divisions involved: 20
- Includes animal labs, cell biology, molecular biology, pathology

QMC Meetings By Calendar Year (N)

Calendar Year	Initial Project Meetings	Initial Investigator Meetings	Repeat Investigator Meetings
2010	70	56	14
2011	174	109	65
2012	270	130	140
2013	252	112	140
2014	254	102	152
2015 (8 months)	130	48	82
Total	1150	557	593

QMC Meetings by their Purpose

Purpose	Number	Percent
Grant application	360	31%
Stat analysis	380	33%
Study support	178	15%
Study design	118	10%
Journal article	48	4%
Data management	44	4%
Other	22	2%

QMC: External Collaborations

- Mast Therapeutics (SCD)
- Corrona, LLC (Rheumatoid Arthritis Registry)
 - AbbVie
 - IMS
 - Roche
- Sano Diagnostics (Wound diagnostics)
- Vanguard Therapeutics (SCD)
- Betterpath, LLC (Chronic disease registry)
- Maharishi University of Management (Transcendental Meditation Studies)

QMC Challenges

- Find right business model to recoup costs while providing low-/no-cost service for grant applications and junior investigators
- Provide growth/promotion opportunities for our faculty and staff in a service-oriented environment
- Handle volume of incoming requests
- Absorb faculty/staff time on funded projects
- Balance between internal/external funding

QHS EDUCATIONAL EFFORTS

FY 15

Bringing along the next generation...



Clinical and Population Health Research (CPHR) Program

- **Kate Lapane, PhD, MS**, Associate Dean
- Focused on epidemiology, biostatistics, and health services research for translating research into effective disease prevention programs, clinical practice and policy
 - 13 PhD students
 - 6 MD-PhD students
 - 2 Pathways to Graduate Study students
 - **30 graduates since 2008**



Examples of CPHR Students' Research

- **Natasha Dolgin**, is studying the impact of functional status in post-transplant outcomes (Mentors: **Adel Bozorgzadeh** and **Fred Anderson**)
- **Gillian Griffith** is studying the impact of substance abuse disorders on contraceptive method selection and adherence (Mentor: **Robin Clark**)
- **ShaoHsien Liu, MPH** is focusing on the application of advanced statistical methods in osteoarthritis research (Mentor: **Kate Lapane**)
- **Lisa Nobel, MS**, is investigating trajectories of health-related quality of life, symptoms and functional status after discharge for acute coronary syndrome (Mentor: **Jeroan Allison**)
- **Sherry Xiao, MPH**, is quantifying the effect of sleep quality and duration on dietary behaviors on women with young children (Mentor: **Molly Waring**)

Student Achievements

- **Lisa Nobel, MS:** F30 and Canadian research award
- **Lauren Powell:** HOPE Scholar, APHA Student Meeting Director, CDC Millennium Scholar, supplemental grant award from NIH/NIMHD
- **Mollie Wood, MPH, PhD** - winner of 2015 SPER Student Prize Award for her paper “Prenatal triptan exposure increases externalizing behaviors at three years: results from the Norwegian Mother and Child Cohort Study.”
- **Camilla Pimentel, MPH, PhD** -selected as the recipient of the 2015 American Geriatrics Society Scientist-in-Training Research Award.
- **Natasha Dolgin** – won Top Poster Distinction by the American Society of Transplant Surgeons)
- **Jacob Hunnicutt, MPH:** GSBS Award for Outstanding First Year Student
- Travel awards to International Society for Pharmacoepidemiology, APHA
- Presentations at Study of Social Problems Annual Meeting, AcademyHealth, APHA, ICPE, SCTM

2015 CPHR Graduates: Where Are They Now?

- **Barbara Gandek, PhD**- Assistant Prof UMMS
- **Christine Ulbricht, PhD**- Instructor UMMS
- **Carol Curtin, PhD** – faculty -Shriver Center at UMMS
- **Camilla Pimentel, PhD** - post-doctoral fellow at UMMS
- **Mollie Wood, PhD**, - post-doctoral fellow University of Oslo
- **Han-Yang Chen, PhD** – Aurora Research Institute

Master of Science in Clinical Investigation (MSCI)

- **Rob Goldberg, PhD**, Director
- Provides clinician/post-doctoral trainees with methodologic and content skills that will enable them to design, conduct and analyze the results of clinical, public health and translational research investigations
- 6 full- and part-time students
- **18 graduates**
- **New MD-MSCI program**
 - A “pull out” year after the 2nd year of medical school to complete the MSCI
 - First student will matriculate in Fall 2016 semester!

Additional Educational Efforts

Clinical/Translational Research Pathway (CTRP)

- **Drs. Silvia Corvera** and **Catarina Kiefe**, Co-Directors
- Provides an opportunity for med students to participate in experiential learning and clinical/translational research courses in parallel with the medical student curriculum

Transdisciplinary Training in Cardiovascular Research (T32)

- Co-PIs: **Drs. John Keane Jr.** and **Catarina Kiefe**
- Pre- and post-doctoral fellowship program that encompasses the full spectrum of CVD research, from basic to implementation science

Implementation Research Training Program in Cancer Prevention and Control (R25)

- Co-PIs: **Drs. Thomas Houston** and **Stephenie Lemon**
- Post-doctoral fellowship program focused on implementation science research in tobacco, obesity, diet, physical activity, skin cancer prevention and cancer screenings

(www.umassmed.edu/pracctis)

New Educational Developments in QHS

CTSA training programs: and KL2 –

- **New TL1.** Dual PIs **Drs. Silvia Corvera and Kate Lapane:**
Pre- and post-doctoral fellowship program to provide clinical and translational science training
- **KL2.** Dual PIs **Drs. Jeroan Allison and John Keaney:**
Career development Awards for junior faculty

Enhancing the Success of Underrepresented Students in the Biomedical Sciences (R25)

- Dual PIs: **Drs. Kate Lapane and Brian Lewis**
- Pre-doctoral fellowship program to increase the diversity of our student body

QHS Challenges/opportunities for FY 16

- “Five”-year review
- Active search for senior faculty statistician
- Restructuring QMC: BIG-BERD?
- New CTSA programs

Growing up is challenging...



QUESTIONS?
