

CURRICULUM VITAE

BIOGRAPHICAL

Name: Michael E. Matheny, MD, MS, MPH Birth Date: September 09, 1973
Business Address: GRECC Birth Place: Corinth, MS
VA Medical Center Citizenship: U.S.
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Nashville, TN 37211
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EDUCATION and TRAINING

POSTGRADUATE

2001-2004 St. Vincent Hospital & Health Services Internal Medicine Resident
Indianapolis, IN
Program Director: Robert M. Lubitz, M.D., M.P.H.
2004-2007 Decision Systems Group Medical Informatics
Harvard/MIT Division of Health Sciences & Fellow
Technology
Boston, MA
Advisor: Lucila Ohno-Machado, M.D., Ph.D.

GRADUATE

1997-2001 University of Kentucky, Lexington, KY M.D. Medicine
2004-2006 Massachusetts Institute of Technology, M.S. Biomedical Informatics
Cambridge, MA
Advisor: Frederic S. Resnic, M.D., M.S.
2005-2007 Harvard University, Cambridge, MA M.P.H. Public Health

UNDERGRADUATE

1991-1997 University of Kentucky, Lexington, KY B.S. Chemical Engineering
Cum Laude

CERTIFICATION and LICENSURE

Tennessee State License (09/30/07 – 09/30/15) 42571
United States DEA License (01/07 – 01/16)
American Board of Medicine Certification (10/2004 – 10/2014) 230233
Clinical Informatics Specialty Certification (01/2014 – 01/2024) 070362
National Provider Identifier 1275579427

APPOINTMENTS and POSITIONS

1994-1995	Center For Applied Energy Research, Lexington, KY	Co-Operative Student Researcher
2002-2004	ICU, Bariatrics, and Medicine Floor Coverage St. Vincent's Hospital, Carmel, IN	Moonlighting Physician
2004-2007	Harvard Medical School, Boston, MA	Instructor In Medicine
2004-2007	Urgent Care Clinic 1 Day/Wk Brigham Internal Medicine Associates Brigham & Women's Hospital, Boston, MA	Associate Physician
2007-2009	Department of Biomedical Informatics (2°) Vanderbilt University, Nashville, TN	Instructor in Biomedical Informatics
2007-2009	Division of General Internal Medicine (1°) Vanderbilt University, Nashville, TN	Instructor in Medicine
2007-	Geriatrics, Research, and Clinical Care (GRECC) Veteran's Administration, Nashville, TN	Staff Physician
2009-2014	Department of Biomedical Informatics (2°) Vanderbilt University, Nashville, TN	Assistant Professor of Biomedical Informatics
2009-2014	Division of General Internal Medicine (1°) Vanderbilt University, Nashville, TN	Assistant Professor of Medicine
2010-	VA TVHS Informatics Fellowship, Nashville, TN	Associate Director
2010-	Department of Biostatistics (2°), Vanderbilt University, Nashville, TN	Assistant Professor of Biostatistics
2015-	Department of Biomedical Informatics (1°) Vanderbilt University, Nashville, TN	Assistant Professor of Biomedical Informatics
2015-	Division of General Internal Medicine (2°) Vanderbilt University, Nashville, TN	Assistant Professor of Medicine
2015-	Center for Population Health Informatics, Vanderbilt University, Nashville, TN	Director

PROFESSIONAL and SCIENTIFIC SOCIETY MEMBERSHIPS

1997-2007	Member, American Medical Association
2001-2005	Associate, American College of Physicians
2003-	Member, American Medical Informatics Association (AMIA)
2003-2007	Member, AMIA Student Workgroup
2006-	Member, Society of General Internal Medicine
2007-	Member, AMIA Clinical Research Informatics Workgroup
2007-	Member, AMIA Pharmacoinformatics Workgroup
2008-2011	Member, American College of Physicians
2009-2011	Elected Member-At-Large, AMIA Clinical Research Informatics Workgroup
2010-	Member, International Society for Pharmacoepidemiology (ISPE)
2011	Ad-Hoc Scientific Review Member, VA Health Services Research & Development Scientific Merit Review Board, Methods and Informatics Section

2011 Steering Committee, Medical Device Special Interest Group (ISPE)
 2011 Review Committee , Health Information Technology Section, Academy Health
 2011- Elected Fellow, American College of Physicians
 2012 Ad-Hoc Scientific Review Member, VA Health Services Research &
 Development Scientific Merit Review Board, Long Term Care Section
 2012/02 Ad-Hoc Scientific Review Member, Patient Centered Outcomes Research
 Institute (PCORI), Scientific Review Study Section
 2012 Field Based Biomedical Informatics Funding Advisory Board, VA Health
 Services Research & Development
 2013-2017 External Steering Committee Member, Indianapolis VA HSR&D Center for
 Health Information and Communication (COIN)
 2014-2016 Standing Scientific Review member, VA Health Services Research &
 Development Scientific Merit Review Board, Methods and Informatics Section
 2014 Elected Co-Chair, Medical Device Special Interest Group (ISPE)
 2014- Research & Publications Committee, National VA CART-CL Program
 2014 Ad-Hoc Scientific Review Member, VA Health Services Research &
 Development Scientific Merit Review Board, Behavioral, Social, and Cultural
 Determinants of Health & Care
 2015 Elected Chair, Medical Device Special Interest Group (ISPE)
 2015 Scientific Program Committee Member, Applications Track, American Medical
 Informatics Association

INVITED PRESENTATIONS

International Research

2013-08-28 International Conference for Pharmacoepidemiology, Montreal, Canada.
 "Development and Evaluation of a Post-Operative Event Monitor: POEMS"

International Expert Panel

2014-10-27 International Conference for Pharmacoepidemiology, Taipei, Taiwan,
 "Combination Medical Product Case Study: Biodegradable Drug Eluting Stents"

National Research

2003-11-13, American College of Physicians – Indiana Chapter. Indianapolis, IN.
 "Comparison of Documentation and Patient Outcomes Between Paper and Electronic Medical
 Record Systems in a Resident Clinic."
 2005-07-12, AHRQ Practice-Based Research Network, Washington, DC. "Evaluation of
 Guideline Compliance after the Implementation of a Clinical Decision Support and
 Computerized Physician Order Entry System for Medication Laboratory Monitoring."
 2005-11, American Medical Informatics Association, Washington, DC. "Evaluating the
 Discriminatory Power of a Computer-Based System for Assessing Penetrating Trauma on
 Retrospective Multi-Center Data."
 2005-11-29, Radiological Society of North America, Chicago, IL. "Lack of Integration
 between CPOE and RIS is a Potential Source of Reporting Errors for Outpatient Radiology
 Studies."

2007-04-27, Society of General Internal Medicine, Toronto, Canada. "Impact on Patient Satisfaction with Physician Use of an Automated Test Results Management System."
2007-11-12, American Medical Informatics Association, Chicago, IL. "Rare Adverse Event Monitoring of Medical Devices with the Use of an Automated Surveillance Tool."
2009-07-17, U.S. Preventive Services Task Force Meeting, AHRQ, Rockville, MD. "Systematic Review of Primary Cardiovascular Disease Risk Assessment Tools"
2009-08-17, VA Consortium for Healthcare Informatics Research, Salt Lake City, UT. "Applications of Natural Language Processing in VA Data: Lessons Learned."
2009-11-16, American Medical Informatics Association, San Francisco, CA. "Detection of Blood Culture Bacterial Contamination using Natural Language Processing."
2010-06-25, Society of Epidemiological Research, Seattle, WA. "FDA Panel: Application of Methodological Advancements and Challenges in Medical Device Research."
2011-08-15 International Conference of Pharmacoepidemiology and Therapeutic Risk Management 2011, Chicago, IL. "Use of Propensity Score Matching for Automated Active Surveillance in Clinical Registries."
2012-05-07 Academy for Healthcare Improvement: Advancing The Methods for Healthcare Quality Improvement Research, Washington, DC. "Time Series and Risk Adjusted Control Charts"
2012-07-31 National VA Systems Facing Health Management Platform Committee, Webinar. "TVHS Local Laboratory for Clinical Informatics"

National Expert Panel

2012-05-08 Academy for Healthcare Improvement: Advancing The Methods for Healthcare Quality Improvement Research, Washington, DC. "Best Methods In Healthcare Quality Improvement"
2013-03-18 Brookings Institution, Washington DC, "Information Needs for Ongoing Care of Patients with Devices"

National Workshop

2013-07-22 Academy Health, Baltimore, MD, "Natural Language Processing For Health Services Researchers"

Local Research (Invited External)

2008-05-23, Decision Systems Group, Brigham & Women's Hospital, Boston, MA. "Towards Automated Medication Outcomes Surveillance Among Hospitalized Patients in the Veteran's Administration."
2009-11-02, UMass Department of Quantitative Health Sciences, Worcester, MA. "Automated Outcome Surveillance of Medical Products using Clinical Registries."
2010-08-02, Tampa VA HSR&D Center Of Excellence, Tampa, FL, "Development of a Machine Learning Assisted Annotation Tool for PTSD Medical Documents."
2011-05-11, UCSD Division of Biomedical Informatics, San Diego, CA. "Automated Applications for Medical Device Post-Marketing Surveillance."
2011-05-12 iDASH NCBC Symposium 2011, San Diego, CA. "Event Detection Statistics Toolbox: Method Selection Considerations."
2011-05-13 SCANNER R-01 Briefing Meeting, San Diego, CA. "Observational Cohort Surveillance: Anti-Platelet and Anti-Thrombotic Use Cases."

2011-09-09 IDASH NCBC Recorded Webinar, “Automated Surveillance of New Anti-Thrombotic and Anti-Platelet Agents: Data and Statistical Challenges.”

2011-11-11 University of Kentucky Institute for Pharmaceutical Outcomes and Policy, Lexington, KY. “Automated Active Surveillance for Medical Products in Clinical Registries.”

2012-01-11 VA CART-CL Cardiovascular Research Group, Denver, CO. “National Surveillance of Acute Kidney Injury following Cardiac Catheterization.”

2012-03-06 Multi-Center SCANNER Grant Collaboration, Webinar. “OCEANS: Statistical Toolkit Update”

2012-04-27 Biomedical Research & Education Foundation, West Palm Beach, FL. “Utility of Electronic Health Record Data for Medical Device Surveillance”

2012-10-05 University of Kentucky Medical Center Department of Medicine Grand Rounds, Lexington, KY. “Automated Active Surveillance for Medical Products in Cardiac Catheterization Registries”

2013-09-16 IDASH National Center For Biomedical Computing All-Hands Meeting, UC San Diego, San Diego, CA. “Medication Surveillance Observation Study Summary Findings”

2013-10-23 University of Texas, School of Biomedical Informatics, Houston, TX. “Patient Safety: Enhancing Surveillance of Medical Devices.”

2014-05-27 University of Iowa General Internal Medicine Division Rounds, Iowa City, IA “Patient Safety: Enhancing Surveillance of Medical Devices”

2014-09-16 IDASH National Center for Biomedical Computing All-Hands Meeting, UC San Diego, San Diego, CA. “Analytics Framework for pScanner Distributed Network”

Local Research (Home Institution)

2006-11-15, Harvard School of Public Health, Boston, MA. "Impact on Patient Satisfaction with Physician Use of an Automated Test Results Management System. HSPH MPH Research Practicum Presentation."

2007-05-02, Decision Systems Group, Brigham & Women's Hospital, Boston, MA. "Impact on Patient Satisfaction with Physician Use of an Automated Test Results Management System."

2008-01-24, Center for Improving Patient Safety, Vanderbilt University Medical Center, Nashville, TN. "Automated Outcome Surveillance of Medical Products Using Clinical Registry and Electronic Health Record Data"

2010-03-17, Vanderbilt Department of Biostatistics Seminar, Nashville, TN. “Analysis Methods for Medical Product Post-Marketing Surveillance.”

2010-04-07, Vanderbilt Department of Biomedical Informatics Grand Rounds, Nashville, TN. “Automated Applications for Medical Device Post-Marketing Surveillance.”

2011-03-11, Research Council, Department of Medicine, Vanderbilt University Medical Center, Nashville, TN. “Analysis Methods for Medical Product Post-Marketing Surveillance.”

2012-03-21 VISN 9 GRECC External Advisory Board, Nashville, TN. “National Surveillance of Acute Kidney Injury Following Cardiac Catheterization”

2012-08-09 Anesthesiology Informatics Research Seminar, VUMC, Nashville, TN. “Automated Active Surveillance for Medical Products in Clinical Registries”

2012-08-30 VA Central Office GRECC Site Visit, TVHS VA, Nashville, TN. “National Surveillance of Acute Kidney Injury following Cardiac Catheterization”

2012-09-13 VA GRECC Informatics WIP, TVHS VA, Nashville, TN. “National Surveillance of Acute Kidney Injury following Cardiac Cauterization”

2013-01-09 Vanderbilt Division of General Internal Medicine Grand Rounds, Nashville, TN. “Automated Active Surveillance for Medical Products in Cardiac Catheterization Registries”
 2013-04-24 Personalized Risk Prediction Symposium, Vanderbilt Department of Biostatistics, Nashville, TN, “Challenges in Individual Risk Prediction for Hospitalized Acute Kidney Injury”
 2013-08-01 Vanderbilt Department of Medicine Grand Rounds, Nashville, TN. “Patient Safety: Enhancing Surveillance of Medical Devices”
 2014-08-06 Vanderbilt Department of Biomedical Informatics Guest Lecture, Nashville, TN “Population Health Informatics: Enhancing Surveillance of Medical Products”

Local Expert Panel (Invited External)

2011-05-12 iDASH NCBC Symposium 2011, San Diego, CA. “Medical Product Surveillance in Observational Cohorts.”
 2014-09-16 iDASH NCBC Symposium 2014, San Diego, CA. “Data Harmonization and Synergies: OMOP, PCORNet CDM and the CTSA cohort identification models”

EDITORIAL EXPERIENCE

Editorial Board

2012-2016 Informatics
 2012-2017 Methods of Information in Medicine

Invited Poster Judge

2009, 2011 AMIA Fall Symposium

Ad-Hoc Reviewer

2005,2007,2009,2011 Journal of Biomedical Informatics
 2005-2008 American Journal of Managed Care
 2006 Hawaii International Conference on System Sciences
 2006-2007 Journal of Hospital Care
 2006-2013 American Medical Informatics Association Fall Symposium
 2007, 2009 Methods of Information in Medicine
 2007-2008, 2013-2014 Journal of the American Medical Informatics Association
 2007-2008 Artificial Intelligence in Medicine
 2009 Archives of Internal Medicine
 2009-2013 Medical Care
 2010 Journal of Medical Internet Research
 2010 Medical Decision Making
 2011 BMJ Medical Informatics & Decision Making
 2011 BMJ Quality & Safety
 2011 Clinical Journal of the American Society of Nephrology
 2012 CHEST
 2012 Circulation: Cardiovascular Quality and Outcomes
 2013 American Journal of Epidemiology
 2013 Circulation

2014

AMIA Joint Summits on Translational Science

TEACHING

2006	Guest Lecturer, "Risk Modeling: Calibration, Recalibration, and Remodeling." HST.951 Medical Decision Support Massachusetts Institute of Technology, Cambridge, MA.
2006,2007	Internal Medicine Resident Preceptor Brigham Internal Medicine Associates Brigham & Women's Hospital, Boston, MA
2007-Current	Internal Medicine Resident Preceptor Vanderbilt University Medical Center, Nashville, TN
2008	Small Group Preceptor Preventive Medicine Vanderbilt Medical School, Nashville, TN
2008, 2010	Guest Lecturer, "Diagnostic Testing" Decision Analysis, Master's in Public Health Elective Vanderbilt University, Nashville, TN
2010, 2011, 2012, 2013, 2014	Guest Lecturer, "Introduction to Public Health Informatics," Foundations of Informatics, Department of Biomedical Informatics Vanderbilt University, Nashville, TN
2011	Guest Lecturer, "Propensity Score Methods," Evaluation Methods in Biomedical Informatics, Department of Biomedical Informatics, Vanderbilt University, Nashville, TN
2013	Guest Lecturer, "Study Designs, Clinical Registries, Controlled Vocabularies, and Common Data Models", Global Health Informatics, Department of Biomedical Informatics, Vanderbilt University, Nashville, TN
2014	Guest Lecturer, "Consideration for Scaling Medical Device Analyses to Large Observational Data", International Society of Pharmacoepidemiology, Taipei, Taiwan

COMMITTEES

2011 - Current	Admissions Committee, Department of Biomedical Informatics, Vanderbilt University Medical Center, Nashville, TN
2012	Editorial Board, Reputation Book & Web Content, Department of Biomedical Informatics, Vanderbilt University Medical Center, Nashville, TN
2012	Clinical Informatics Fellowship Curriculum/Organization Committee, Department of Biomedical Informatics, Vanderbilt University Medical Center, Nashville, TN

HONORS and AWARDS

1991-1995	National Merit Scholarship, University of Kentucky
2000-2001	Robert P. Meriwether Scholarship, University of Kentucky College of Medicine
2003	1 st Place Research Abstract, American College of Physicians Indiana Chapter
2004	Internal Medicine Research Award, St. Vincent Hospital & Health Services

2005	Nominated for Distinguished Paper Award, American Medical Informatics Association Annual Symposium
2008	Notable Publication (Matheny ME, et al. Arch Intern Med 2007;167-2233-9), Year In Review, American Medical Informatics Association Annual Symposium
2008	Notable Publication (Matheny ME, et al. JAMIA 2008;15(4):424-9), Year In Review, American Medical Informatics Association Annual Symposium
2009	Notable Publication (Ho L, et al. JAMIA 2009;16(1):66-71), Year In Review, American Medical Informatics Association Annual Symposium
2009	Director's Star for Positive Patient Feedback, TVHS VA Facility, Nashville, VA
2011	Notable Publication (Resnic, et al. JAMA 2010;304(18):2019-27), Year in Review, American Medical Informatics Association Clinical Research Informatics Summit
2011	Selected Publication (Matheny, et al. Med. Decis. Making 2010;30:639-50), 2011 Yearbook, International Medical Informatics Association
2012	Distinguished Young Alumni Award, University of Kentucky College of Medicine
2013	TVHS VA Facility Nominee for Presidential Early Career Award for Scientists and Engineers (PECASE) , TVHS Veterans Administration

MENTORSHIP

RESEARCH

Bilal A. Ahmed	Medical Student	2005-2007
Kou-Wei Chiu, MD, MS	VUMC Informatics Fellow	2008-2009, Master's Thesis Committee
Michelle Griffith, MD	Endocrinology Fellow	2009-2011
Jeffrey Leegon, MS	Biomedical Informatics PhD Candidate	2009-2011, PhD Thesis Committee
Glenn Gobbel, DVM, PhD	VA Informatics Fellow	2009-2012, Master's Thesis Committee Chair
Ruth Reeves, PhD	VU/VA Assistant Professor VA Informatics Fellow VA HSRD Research Scientist	2012-, Junior Faculty Mentor 2009-2011 2011-, Junior Faculty Mentor
Kathleen Figaro, MD, MPH	Endocrinology Fellow	2010-2013
Robert Cronin, MD	Medicine-Pediatrics Resident Biomedical Informatics MS Candidate	2011-2013 2013-Current
Dax Westerman, MS	Biomedical Informatics MS Candidate	2012-2013
Jejo Koola, MD	VA Informatics Fellow Biomedical Informatics MS Candidate	2012-Current, Master's Thesis Committee Chair
Eleanor Barone, MD	VA Informatics Fellow	2013-Current
Sharon Davis, MPH	Biomedical Informatics PhD Candidate	2013-Current, Master's Thesis Committee Chair

Jacob VanHouten, PhD	Biomedical Informatics PhD Candidate	2013-Current, PhD Thesis Committee Member
Keaton Morgan	Vanderbilt Medical Student	2014-Current, VSM Research Clerkship Mentor

CLINICAL

Jason Pritchett, MD	Internal Medicine Resident	2007-2009, Clinic Preceptor
Nathaniel Coleman, MD	Internal Medicine Resident	2007-2009, Clinic Preceptor
Cyndya Shibus, MD	Internal Medicine Resident	2007-2009, Clinic Preceptor
Christen Klochan, MD	Internal Medicine Resident	2007-2010, Clinic Preceptor
Scott Huntington, MD	Internal Medicine Resident	2009- 2011, Clinic Preceptor
Dawn Wiese, MD, MS	Internal Medicine Resident	2009-2012, Clinic Preceptor
Norman Clark, MD	Internal Medicine Resident	2009-2012, Clinic Preceptor
Dia Waguespack, MD	Internal Medicine Resident	2010-2013, Clinic Preceptor
Colin Holtze, MD	Internal Medicine Resident	2011-2014, Clinic Preceptor
Burcu Gul, MD	Internal Medicine Resident	2012-, Clinic Preceptor
Thomas Atwater, MD	Internal Medicine Resident	2012-, Clinic Preceptor
Luke Habegger, MD	Internal Medicine Resident	2014-, Clinic Preceptor

RESEARCH SUPPORT (ACTIVE)

Development of an Automated Nephrotoxicity Pharmacosurveillance System

Agency: Veteran's Administration Health Services Research & Development (VA HSR&D)

Grant Type: CDP-09-387 (Career Development Award)

PI: Michael E. Matheny Effort: 36%

Period: 09/2009 – 08/2014 Total Funding: 793,750

This project is a career development award under the mentorship of Drs. Ted Speroff and Robert Dittus to develop and pilot an automated nephrotoxicity surveillance tool using VA data. This project is series of retrospective studies to: 1) perform a systematic review of risk factors for acute kidney injury, 2) validate a data processing system for extracting VA data and structuring it for use in surveillance activities, 3) perform retrospective evaluation of existing VISN9 data with established and experimental methods, 4) risk prediction model for AKI in order to perform risk adjustment, and 5) perform a feasibility study of a prospective automated system in retrospective VISN9 VA data.

National Surveillance of Acute Kidney Injury Following Cardiac Catheterization

Agency: VA HSR&D

Grant Type: IIR-292-1 (Investigator Initiated Research)

PI: Michael Matheny Effort 15%

Period: 09/2012 – 08/2015 Total Funding: 1,048,664

The goal of this grant is to develop real-time natural language processing tools to augment the national voluntary Veterans Administration cardiac catheterization registry, to develop national risk adjustment and risk prediction models for post-procedural acute kidney injury, and to perform national institutional quality profiling and quality improvement.

Automating Heart Failure Data for Patient Treatment Goals at the Point of Care

Agency: VA HSR&D

Grant Type: IIR (Investigator Initiated Research - Houston CREATE)

PI: Jennifer Garvin, PhD

Site PI: Michael Matheny

Period: 10/01/2013 – 09/31/2015

Total Funding: \$1,000,000

In this study, we will develop an automated post-discharge communication aid that contains information needed to prompt beta blocker titration by the PACTs at the point of care. We operationally define point of care within the context of PACT practice as any setting where a provider evaluates clinical information and makes a care decision. This communication aid will contain key clinical information such as the patient's ejection fraction, current beta blocker dose, target beta blocker dose per the guidelines, information on patient's heart rate and blood pressure, and any beta blocker allergy. We will use informatics techniques, including information extraction and natural language processing (NLP), to accurately extract key clinical information and to identify candidate patients for beta blocker titration.

Validation and National Pilot Deployment of Automated Medical Product Surveillance Tools in the Next-Generation VA Electronic Health Record

Agency: VA Operations (Health Informatics Initiative [HI²])

Grant Type: Operational Contract

PI: Michael E. Matheny

Period: 10/01/2013 – 09/31/2014

Total Funding: 130,000

In this contract, we will adapt the open source automated surveillance tools that we have been developing over the last 10 years into the System Facing VA Health Management Platform system as a pilot. These tools will allow medication and medical device comparative effectiveness surveillance and analyses on national VA EHR data as well as allowing risk-adjusted institutional and provider quality profiling. We will validate the system by evaluating the anti-thrombotic and anti-platelet evaluations done in the IDASH & SCANNER grants as well as deploying the risk-adjusted hospital-acquired acute kidney injury surveillance tools developed in Dr. Matheny's CDA.

Patient-Centered SCALable National Network for Effectiveness Research (pSCANNER)

Agency: PCORI

Grant Type: Clinical Data Research Network (CDRN)

PI: Lucila Ohno-Machado

Site PI: Michael Matheny

Period: 04/2014 – 10/2015

Total Funding: 7,000,000 (Site 500,000)

This project is designed to utilize a distributed privacy-preserving architecture to integrate data from three existing networks covering over 21 million patients in all 50 states: (1) VA Informatics and Computing Infrastructure (VINCI), with data from Veteran Health Administration's (VHA) 151 inpatient and 827 community-based outpatient clinics; (2) the University of California Research eXchange (UC-ReX) network, with data from UC Davis, Irvine, Los Angeles, San Francisco, and San Diego; and (3) SCANNER, a consortium of UCSD, Tennessee VA, and three federally qualified health systems in the Los Angeles area supplemented with claims and health information exchange (HIE) data, led by the University of Southern California. Initial use cases will focus on three conditions: (1) congestive heart failure, (2) Kawasaki disease, and (3) obesity. Stakeholders, such as patients, clinicians, and health service researchers will be engaged to prioritize research questions to be answered through the network.

Active Surveillance of Cardiovascular Devices: The Multi-Registry DELTA Network

Agency: FDA

Grant Type: U-01

PI: Frederic S. Resnic (Lahey Clinic)

Site PI: Michael E. Matheny (Nashville VA)

Period: (projected) 03/2014 – 02/2015

Total Funding: 250,000 (Site 40,000)

Establishing appropriate expectations for device performance is critical in monitoring for medical device failures, as well as for surveillance for potential risks from contamination or sabotage. We propose to develop methods and infrastructure for prospective medical device safety surveillance that address these key limitations, while establishing a national distributed cardiovascular device safety network to monitor newly released, high risk cardiovascular devices.

Modeling of Opioid-Induced Constipation Among Opioid-Treated Patients with and without Laxative Response

Agency: AstraZeneca

Grant Type: Unrestricted Research Grant

PI: Michael Matheny

Period: (projected) 07/2014 – 01/2016

Total Funding: 700,000

The purpose of the study is 1) to determine within the national VA patient cohort if any clinical characteristics would predict an opioid-treated patient's subsequent development of OIC and 2) to determine if any clinical characteristics would predict an OIC patient's response or lack of a response to generic or over-the-counter (OTC) laxatives. This study is in support of AstraZeneca's Naloxegol program obtain insights into the development of OIC among opioid-treated patients and OIC patients' response to laxatives.

Automated Surveillance and Intervention Among Patients with Liver Cirrhosis

Agency: VA HSR&D

Grant Type: IIR 13-052 (Investigator Initiated Research)

Multiple PIs: (Corresponding) Michael Matheny (Nashville), Samuel Ho (San Diego)

Period: (projected) 07/2014 – 06/2018

Total Funding: 1,050,000 (Site 400,000)

The overall objective of this project is to develop the informatics infrastructure and tools to facilitate improved evidence based quality care delivery to patients with cirrhosis that will impact readmission and mortality rates. More specifically, we will 1) develop and validate near real-time natural language processing (NLP) tools in order to extract information that is relevant for case finding and risk factor modification among these patients, 2) develop and validate a robust family of logistic regression prediction models for readmission and mortality following hospitalization for use in the identification of high risk patients, 3) development of a clinical dashboard with imbedded clinical decision support and patient data visualization tools to support clinical care delivery, and 4) conduct a pre-post clinical pilot to evaluate the efficacy and adoption of the dashboard when used.

Temporal Pattern Discovery Across & Within Documents of Veterans in PTSD Care

Agency: VA HSR&D

Grant Type: IIR (Investigator Initiated Research)

Multiple PIs: Ruth Reeves and Theodore Speroff (Nashville)

Co-Investigator: Michael E. Matheny

Period (projected) 08/2014 – 07/2017

Total funding \$667,087

Tracking a veteran’s PTSD symptoms and treatments over time is currently a matter of reading through narrative text to assemble a working time-line in the clinician’s mind. We propose to develop a temporal reasoning NLP tool for ordering relevant events contained within the EHR, linking across multiple documents to construe sequences of PTSD symptom occurrences and treatments over time, importing and updating these events within a queriable event database.

Leveraging Information in the EHR to Measure Pressure Ulcer Risk in Veterans with SCI

Agency: VA HSR&D

Grant Type: IIR (Investigator Initiated Research)

PI: Steven Luther

Site PI: Michael E Matheny

Period: 12/2013-10/2016

Description/Goals of Project: Pressure ulcers (PrU) are among the most significant complications in Veterans with spinal cord impairment (SCI) in terms of quality of life and cost of care. The goal of this 3-year healthcare informatics study is to leverage structured and unstructured (text) data available in the VA electronic health record to develop SCI specific risk models that can be used to better identify risk for PrUs and target prevention strategies, thereby reducing the burden of this condition on Veterans.

RESEARCH SUPPORT (PENDING)

RESEARCH SUPPORT (COMPLETED)

Use of NLP in the Extraction of Values from Semi-Structured Free Text

Agency: Veteran's Administration Health Services Research & Development (VA HSR&D)

Grant Type: SHP-08-179 (Short-Term Project)

PI: Michael Matheny

Effort: 40%

Period: 04/2008 – 10/2008

Total Funding: 123,000

This project involves the development of an NLP tool to extract values from semi-structured free text, such as microbiology reports and templates. The tool will then be evaluated by extracting bacteriology culture and sensitivity data, and a rule algorithm will be developed to detected contaminated blood cultures.

Syndromic Surveillance using Natural Language Processing

Agency: Veteran's Administration Health Services Research & Development (VA HSR&D)

Grant #: SDR-07-330 Phase 2 (Service Directed Research)

PI: Steven Brown

Co-I: Michael E. Matheny

Effort: 25%

Period: 7/2007 - 9/2008

Total Funding: 376,492*

* Total funding is for both phases of the grant, each a year long.

Troops deployed to OEF and OIF missions are at risk of exposure to biological and chemical agents. Electronic surveillance of discharge medical examinations (BDD) and VA C&P examinations could provide early detection of signs and symptoms resulting from biological and chemical agents for which troops are at risk of exposure in the middle East deployment areas. In addition, outpatient clinical care in the VA provides an opportunity to detect excess prevalence of symptoms and symptoms sets stratified by theater of military operation after adjusting for acute and chronic medical conditions and active medication usage. Such symptom detection in either data source may provide signals to detect unknown biochemical exposures during military service.

Systematic Review of Cardiovascular Disease Risk Assessment Tools

Agency: Agency for Healthcare Research and Quality (AHRQ)

Grant #: Evidence-Based Practice Center Contract HHS-290-2007-10065-1

Content Lead: Michael E. Matheny

Effort: 10%

Methods Lead: Melissa McPheeters

Period: 07/01/2008 – 12/31/2009

Total Funding: 93,000

Evaluation of the performance and external validation of existing cardiovascular disease risk tools with emphasis on the predictive ability of the tool and the magnitude of errors. In addition, the evaluation will focus on tools that include diabetes mellitus as one of the risk factors, and contrast these tools with those that exclude diabetes mellitus.

Electronically Identifying Adverse Events in Clinical Narrative

Agency: Veteran's Administration Health Services Research & Development (VA HSR&D)

Grant #: SAF 03-223-3 (IIR)

PI: Theodore Speroff

Co-I: Michael E. Matheny

Effort: 10%

Period: 10/01/06- 9/30/10

Total Funding: 299,000 / yr

Advancing the process of quality improvement by developing and testing innovative methodological approaches for identifying sources of variation. Health services research and quality improvement are data-driven methods dependent on an ability and capacity for measuring the process and outcome determinants of care.

Automated Medical Device Safety Monitoring

Agency: Food and Drug Administration (FDA)

Contract #: FDA-SOL-08-00837A

PI: Frederic S. Resnic

Site PI (Vanderbilt): Michael E. Matheny

Effort: 10%

Period: 09/2008 – 08/2011

Total Funding: 100,000

Contract from the FDA to provide Massachusetts state-wide surveillance through existing state-mandated interventional cardiology database using the DELTA prospective surveillance system

Information Systems for Detecting and Managing Acute Kidney Injury

Agency: National Library of Medicine (NLM)

Grant Type: R-01-009965

PI: Josh F. Peterson

Co-I: Michael Matheny

Effort: 5%

Period: 9/30/08-9/30/11

Total Funding: 681,000 (direct)

This grant will develop validated methods to detect early acute kidney injury in hospitalized patients and incorporate these methods into information tools which assist hospital care teams with management steps to ameliorate kidney injury and tailor medications and other therapies.

Automated Data Acquisition for Heart Failure: Performance Measures and Treatment

Agency: VA HSR&D

Grant Type: IIR IBE-09-069

PI: Jennifer Garvin, PhD

Site PI: Michael Matheny

Effort: 5%

Period: 04/01/2010 – 03/31/2013

Total Funding: \$1,042,300

The major goals of this project are to address the need to measure treatment performance for chronic heart failure using information extraction and natural language processing techniques.

Integrating Data for Analysis, Anonymization and Sharing (iDASH)

Agency: NIH/ NHLBI

Grant Type: 1-U54-HL108460-01

PI: Lucila Ohno-Machado

Site PI: Michael Matheny

Effort: 10%

Period: 09/20/10 – 09/20/13

Total Funding: 2,314,179

The major goal is to create a National Center for Biomedical Computing that will provide high performance computing infrastructure, develop new data anonymization algorithms to enable privacy-protecting sharing and data analyses of heterogeneous data types, and train the new generation of biomedical informaticists.

Scalable National Network for Effectiveness Research (SCANNER)

Agency: NIH/AHRQ

Grant Type: 1R01HS019913-01

PI: Lucila Ohno-Machado

Site PI: Michael Matheny

Effort: 10%

Period: 10/01/10 - 09/31/13

Total Funding: 2,143,803

The goal is to develop new strategies and tools to allow secure and privacy-protecting electronic health information exchange for research.

Automated Data Acquisition for Heart Failure: Performance Measures and Treatment

Agency: VA Operations (HI²)

Grant Type: Health Informatics Initiative

PI: Jennifer Garvin, PhD

Site PI: Michael Matheny

Effort: 5%

Period: 10/01/2012 – 10/01/2013

Total Funding: \$250,000

The major goals of this project are to address the need to measure treatment performance for chronic heart failure using information extraction and natural language processing techniques.

Development and Evaluation of a Machine Learning Assisted Annotation Tool for PTSD Medical Documents

Agency: Veteran's Administration Health Services Research & Development (VA HSR&D)

Grant Type: CHIR Center Grant, subcontract

PI: Matthew Samore

Site PI: Ted Speroff/Michael Matheny Effort: 8%

Period: 03/01/10-10/01/13

This contract's objectives are to develop and evaluate a machine learning assisted interactive learning annotation tool to perform efficient and accurate knowledge extraction of free text notes within the Veteran's Administration in collaboration with the CHIR initiative.

Natural Language Processing to Ascertain Stress Test Data

Agency: VA IHD QUERI

PI: Steven Bradley (Denver VA)

Site PI: Michael E. Matheny

Period: 07/2013 – 06/2014 Total Funding: 100,000

The goal of this grant is to develop natural language processing tools for the extraction of cardiac stress testing results in order to evaluate the appropriate management among patients nationally within the VA.

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