

COVER NOTE PAGE

Project Title

Assessing Extent of Opioid Epidemic in Baltimore City

Requesting Organization

Baltimore City Law Department  
C/O City Hall, Room 101  
100 N. Holliday Street  
Baltimore, MD 21202  
Phone: (410) 396-3297

Applicant

Sara Gross, JD  
Chief Solicitor at Baltimore City Law Department  
C/O City Hall, Room 101  
100 N. Holliday Street  
Baltimore, MD 21202  
Email: [sara.gross@baltimorecity.gov](mailto:sara.gross@baltimorecity.gov)



## Application for Maryland Medical Care Data Base

TRACKING TABLE (For MHCC Use Only)

MHCC Data Request Number	
Application Received	
Application Approved	
Data Obtained	

### INSTRUCTIONS

This form is required for all Applicants requesting MCDB data. Applicants must also complete all the attachments. The completed Application and the Data Management Plan will be used by MHCC to determine whether the request meets the criteria for data release, pursuant to COMAR 10.26.06. Incomplete applications will be returned to the Applicant, and the request will be delayed. All applications require a non-refundable application fee, payable at the time of submission. All applications must include evidence that the project has been reviewed by an Institutional Review Board that has been or will be recognized by the MHCC.

#### Where to submit documents:

- Completed application packages should be scanned and emailed to: [mhcc.datarelease@maryland.gov](mailto:mhcc.datarelease@maryland.gov)
- A hard copy Application is acceptable and should be sent, with the application fee, to:  
Maryland Health Care Commission  
4160 Patterson Avenue,  
Baltimore, MD 21215,  
ATTN: MHCC Data Release
- Enclose a cover note page that includes the project title, requesting organization's name, and applicant's name.
- If an invoice is needed, send a request to: [mhcc.datarelease@maryland.gov](mailto:mhcc.datarelease@maryland.gov)

#### Note to Applicants:

- Review [data availability and fees](#)
- All application attachments will be incorporated in the Approved Data Use Agreement (DUA)

Questions? Email [mhcc.datarelease@maryland.gov](mailto:mhcc.datarelease@maryland.gov)

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## PROJECT INFORMATION

<b>Project Title</b>			
Assessing Extent of Opioid Epidemic in Baltimore City			
<b>Scheduled Project Start Date</b>	October 1, 2022	<b>Scheduled Project End Date</b>	December 31, 2023
<b>MHCC Staff Approved Pre-Application Number</b>			
<b>Project Overview:</b> <i>Provide an abstract or brief summary (150 words) of the specific purpose and objectives of the Project.</i>			
We seek to use MCDB data to understand the trajectory of the opioid epidemic in the City of Baltimore. The objectives of this project are to estimate the number of individuals affected by the opioid epidemic as well as healthcare utilization and opioid prescribing in the City of Baltimore from 2010 to 2020.			

<b>Applicant</b> <i>(principal investigator, project manager, individual responsible for the research team using the data)</i>					
<b>Name</b>		Sara Gross, JD			
<b>Title</b>		Chief Solicitor			
<b>E-Mail Address</b>		sara.gross@baltimorecity.gov			
<b>Telephone Number</b>					
<b>Organization Name</b>		Baltimore City Law Department			
<b>Mailing Address</b>		C/O City Hall, Room 101, 100 N. Holliday Street			
<b>City/Town</b>	Baltimore	<b>State</b>	MD	<b>Zip Code</b>	21209

<b>Requesting Organization</b> <i>(Agency, Academic Institution, Research Organization, Company, etc.)</i>					
<b>Organization Name</b>		Baltimore City Law Department			
<b>Website</b>					
<b>E-Mail Address</b>					
<b>Telephone Number</b>		(410) 396-3297			
<b>Mailing Address</b>		C/O City Hall, Room 101, 100 N. Holliday Street			
<b>City/Town</b>	Baltimore	<b>State</b>	MD	<b>Zip Code</b>	21209

<b>Data Custodian</b> <i>(person responsible for receiving, organizing, storing, and archiving data)</i>					
<b>Name</b>		Elena Fernandez, PharmD, PhD			
<b>Title</b>		Manager			
<b>E-Mail Address</b>		elena.fernandez@monumentanalytics.com			
<b>Telephone Number</b>		(703) 861-6277			
<b>Organization/Company</b> <i>(if different from Requesting Organization)</i>		Monument Analytics			
<b>Mailing Address</b>		5726 Cross Country Boulevard			
<b>City/Town</b>	Baltimore	<b>State</b>	MD	<b>Zip Code</b>	21209
<b>Relationship to Requesting Organization</b> <i>(e.g., Contractor)</i>		Consultant			

<b>Project Contact</b> <i>(person responsible for all communications with MHCC)</i>					
<b>Name</b>		Elena Fernandez, PharmD, PhD			
<b>Title</b>		Manager			
<b>E-Mail Address</b>		elena.fernandez@monumentanalytics.com			
<b>Telephone Number</b>		(703) 861-6277			
<b>Organization Name</b>		Monument Analytics			
<b>Mailing Address</b>		5726 Cross Country Boulevard			
<b>City/Town</b>	Baltimore	<b>State</b>	MD	<b>Zip Code</b>	21209

# ATTACHMENT A: SCOPE OF WORK

## 1. Project Purpose

- a. Describe the specific research question(s) you are trying to answer or problem(s) you are trying to solve with the MCDB data requested (List and number the individual questions) or describe the intended product or report that will be derived from the requested data.

We propose to use MCDB data to understand the trajectory of the opioid epidemic in the City of Baltimore. Specifically, we are interested in answering the following queries:

1. How many individuals in the City of Baltimore had Opioid Use Disorder (OUD) between 2010 and 2020?
2. What proportion of these individuals had OUD because of the opioid epidemic?
3. How many inpatient, outpatient, and emergency department visits for opioid overdoses and OUD occurred in the City of Baltimore between 2010 and 2020?
4. How much of this health care utilization was a result of the opioid epidemic?
5. What proportion of individuals with OUD received medications for addiction treatment (MAT) in the City of Baltimore between 2010 and 2020?
6. How many individuals developed complications attributable to OUD, including Hepatitis C and HIV infections, neonatal abstinence syndrome (NAS), and opioid-related accidental trauma, in the City of Baltimore between 2010 and 2020?
7. What proportion of individuals with OUD in the City of Baltimore received naloxone between 2010 and 2020?
8. What are the trends of opioid prescribing among health care providers in Baltimore City?

- b. Briefly describe the purpose(s) for which MCDB data are sought. Use quantitative indicators of public health importance where possible. For example: variation in costs of care; rates of under or over service utilization; health system performance measures, the effect of public health initiatives, health insurance, etc.

The opioid epidemic is the worst drug epidemic in our nation's history. In 2019, an estimated 49,860 people died in the U.S. from opioids, more than those who died from motor vehicle accidents, suicide, gun violence, or at the peak of the AIDS epidemic.<sup>1</sup> Though Maryland ranks fifth in opioid-related overdose death rates nationally, the City of Baltimore faces a higher rate of overdoses compared to other areas in Maryland. The number of opioid-related deaths in the City of Baltimore has increased since 2010, reaching 692 deaths in 2017.<sup>2</sup> More recent Baltimore City data from the State of Maryland reports 851 opioid-related deaths in 2019 and 952 opioid-related deaths in 2020.<sup>3</sup> Combating the opioid epidemic has proven difficult for public health officials and other stakeholders for many reasons, including the multitude of contributing factors and downstream effects on individuals and communities. Estimating the burden of the opioid epidemic by epidemiologic methods can be helpful to policymakers to inform and address the needs of individuals affected by the epidemic. Efficient and informed allocation of resources will improve health and reduce long-term costs associated with combating the opioid epidemic. Useful estimates of burden of the opioid epidemic depend on robust and reliable inputs and should incorporate, whenever possible, information specific to the context in which they are applied. Therefore, data from the MCDB can provide important inputs for location-specific estimates of the opioid epidemic in the City of Baltimore over time. Our findings will provide information to stakeholders seeking to abate the opioid epidemic in the City of Baltimore. The data are sought solely for litigation purposes.

1. Centers for Disease Control and Prevention (CDC), "Drug Overdose Deaths," [https://www.cdc.gov/drugoverdose/data/statedeaths.html]
2. Baltimore City Health Department, "Baltimore City's Response to the Opioid Epidemic," [https://health.baltimorecity.gov/oid-overdose/baltimore-city-overdose-prevention-and-response-information]
3. Maryland Opioid Operational Command Center, "2020 Annual Report," [https://s3.documentcloud.org/documents/20614236/2020-annual-report-final.pdf]

- c. Explain in detail how the planned project that will use MCDB data is in the public interest and give specific examples of how the project will serve the public interest.

Monument Analytics is a health care consultancy that is working with the City of Baltimore. Monument is a decentralized, remote company that operates across the United States. At this time we are only requesting access to data from the State of Maryland. The City of Baltimore will use the MCDB data to measure the epidemiology and impact of the opioid epidemic in Baltimore City for opioid litigation purposes. This will be done by identifying the population in the MCDB data with opioid use disorder (OUD) over time and evaluating the health care utilization as captured in the MCDB data for this population. The planned project is in the public interest of the City of Baltimore and its citizens as this litigation and the findings from this analysis will provide important information to stakeholders and the resulting litigation may award abatement and/or damages funds to the City. The estimation of the opioid epidemic in Baltimore City with MCDB data may add support to the City's case for liability and subsequent abatement and/or damages. If the litigation results in abatement and/or damages funds, the City of Baltimore and its citizens will be able to fund programs based on the epidemiology of opioid epidemic in Baltimore City from this analysis to relieve the opioid epidemic in the City. If awarded funds through this litigation, the City of Baltimore public will benefit from various evidence-based programs which could include increased access to healthcare resources and treatment for OUD, including medications for addiction treatment and naloxone for overdose reversal, treatment for OUD complications, harm reduction programs, and programs aimed at preventing further harms related to the opioid epidemic.

## 2. Project Methodology

- a. Provide a written description of the project methodology, state the project objectives, the protocol, software and/or identify relevant study questions and analysis method to allow MHCC to understand how the MCDB Data will be used to meet project objectives or address research questions.

**Project Methodology:** This project will use observational epidemiologic methods with data from MCDB to produce relevant estimates of the burden of the opioid epidemic in the City of Baltimore from 2010 to 2020.

**Project Objectives:** The objectives of this project are to estimate the number of individuals affected by the opioid epidemic as well as subsequent and related healthcare utilization and opioid prescribing in the City of Baltimore from 2010 to 2020.

**Protocol:** We will conduct a descriptive, retrospective cohort analysis of individuals who were potentially affected by the opioid epidemic in the City of Baltimore between 2010 and 2020. We will include individuals 18 years of age or older with any opioid-related healthcare claims. We will exclude individuals in hospice care. We will quantify measures of the opioid epidemic including: the number of individuals with OUD; the number of individuals with opioid attributable complications, including Hepatitis C virus (HCV), HIV, or endocarditis; and healthcare utilization and costs incurred by those affected by the epidemic. Population estimates and healthcare utilization will be calculated annually and over time. We will also assess trends in opioid prescribing over time compared to external records of academic detailing.

We will use the International Classification of Diseases Clinical Modification (ICD-9 and ICD-10) codes to estimate the number of individuals and the volume of opioid-related care. To do so, we will use methods informed by the peer-reviewed literature: (1) with explicit ICD codes for OUD; and (2) when such codes are not available, by a combination of long-term opioid use with additional opioid intoxication, poisoning, or adverse effects.<sup>4</sup> This latter approach is consistent with the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria, which requires at least two adverse opioid events (opioid intoxications, poisonings, or adverse effects) within one year in order to fulfill diagnostic criteria for OUD. We will also characterize individuals experiencing adverse opioid events without fulfilling diagnostic criteria for OUD. ICD codes (9 and 10) for OUD and opioid-related events, where "x" signifies all subsequent sub-codes within each group, include 304.x, 305.x, V58.89, 292.89, 965.0x, E850.x, E935.x F11.1x, F11.2x, Z79.891, F11.129, F11.229, F11.122, F11.222, T40.0xx, T40.1xx, T40.2xx, T40.3xx, T40.4xx, T40.605x, T40.695x. Opioid-related overdose deaths will be estimated by individuals that expired from ICD-9/10 coded opioid overdoses during the study timeframe.

We will also summarize the number of unique individuals with opioid attributable complications such as HCV, HIV, or endocarditis, and subsequent healthcare utilization. We will use ICD codes (9 and 10) such as the following, where "x" signifies all subsequent sub-codes within each group, for HCV (070.7x, 070.41, 070.44, 070.51, 070.54, B17.1x, B18.2, B19.2x), HIV (042, V08, 042.0-2, 042.9, 043.0-3, 043.9, 044.9, 079.53, B20-24), and endocarditis (421.x, 424.x, I33.x, I38, I39). We will also assess the number of unique individuals with OUD or opioid-related events during pregnancy or neonatal abstinence syndrome (NAS) and subsequent healthcare. ICD codes (9 and 10) that will be used for pregnancy are 648.3x, O99.32x, and NAS are 779.5, P96.1, where "x" signifies all subsequent sub-codes within each group.

We will use pharmacy data to assess prescription opioid use as well as treatment of OUD with medications for addiction treatment (MAT) including methadone, buprenorphine, and naltrexone. To do so, we will use both generic names as well as National Drug Codes (NDCs). We will also use covariate information on comorbid conditions, and where available, social history (e.g., alcohol, tobacco, or illicit drug use), and basic demographic information (e.g., age, race, ethnicity, and insurance status and type) to stratify and compare opioid-related healthcare utilization across different subpopulations of interest. Lastly, we will assess trends in opioid prescribing by individual providers in Baltimore City, based on National Provider Identifier, NPI, or Practitioner DEA number, over time.

Based on the amount and distribution of missing data, we will consider data imputation. Lastly, sensitivity analyses will be conducted based on the different definitions of OUD to assess the robustness of our results. Analyses will be conducted with SAS v9.4 (SAS Institute Inc., Cary, NC), STATA (version 15.1, StataCorp, College Station, TX), Microsoft Excel 2021, and R (R Core Team 2021). Protection of human subjects and data safety will be ensured as all data will only be disseminated in aggregate and no identifiable information will be reported.

**Statistical software to analyze MCDB data includes:**

- STATA [StataCorp. 2021. Stata Statistical Software: Release 17. College Station, TX: StataCorp LLC.]
- SAS [SAS Institute Inc 2013. SAS 9.4. Cary, NC: SAS Institute Inc.]
- R [R Core Team (2021). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/]

4. Watson A, Simon DM, Perattiko MB, Stringer EA. Medical Utilization Surrounding Initial Opioid-Related Diagnoses by Coding Method. *American Journal of Managed Care*. 2020;26:e64-e68.
5. Hasin DS, O'Brien CP, Auriacombe M, Borges G, Bucholz K, Budney A, Compton WM, Crowley T, Ling W, Petty NM, Schuckit M, Grant BF. DSM-5 Criteria for Substance Use Disorders: Recommendations and Rationale. *American Journal of Psychiatry*. 2013;170:834.

- b. All Applicants must obtain a review by an Institutional Review Board that has been or will be recognized by the MHCC.

Enter date submitted to IRB

Submitted: 9/30/2021  
Exemption Determination: 10/11/2021

Name of the IRB

WCG IRB formerly, Western Institutional  
Review Board (WIRB)

### 3. Publication and Dissemination

Briefly (1-3 sentences) explain any "Yes" answer.

- a. Do you anticipate that the results of your analysis will be published or made publicly available?

Yes

No

- i. If yes, how do you intend to disseminate the results of the study (e.g., publication in a professional journal, poster presentation, newsletter, web page, seminar, conference, statistical tabulation, etc.)?

A report will be developed that uses the MCDB data to calculate the harms that the opioid epidemic has inflicted on the City of Baltimore. The City may share the report with the Baltimore City Circuit Court, and the report may not be filed publicly initially, but may be subsequently released publicly.

- ii. All public displays of MCDB data, regardless of the medium, must comply with MCDB's cell size suppression policy, as set forth in the Data Use Agreement. Describe how you will ensure that any public display will suppress every cell containing s less than 11 observations and suppress percentages or other mathematical formulas that result in the display of every cell with less than 11 observations.

Any results will be reported as aggregates. If any cell size is less than 11 in aggregated results, cells will be listed as "Suppressed" in the final report.

- iii. Identify the lowest geographical level of analysis of data you will present for publication or presentation (e.g., state level, city/town level, zip code level, etc.). Will maps be presented? What methods will be used to ensure that individuals cannot be identified?

The lowest geographical level of analysis will be the City zip code level. Individuals will be de-identified prior to analysis and results will only be presented in aggregate form. Project products will protect Personal Health Information (PHI) by further aggregating data across specific groups across Baltimore City.

- b. If you answer "yes" to any of the following questions, describe the types of products, software, services, or tools and the corresponding fees will for such products, software, services, or tools.

- i. Will the MCDB data be used for consulting purposes?  Yes  No

- ii. Will report(s), website(s) or a statistical tabulation(s) using MCDB data be shared or sold?  Yes  No

A report will be developed that uses the MCDB data to calculate the harms that the opioid epidemic has inflicted on the City of Baltimore. The City may share the report with the Baltimore City Circuit Court, and the report may be publicly filed. The report of aggregated, non-identifiable data filed with the court may be available to the public. No underlying data will be publicly shared.

iii. Will a software product using MCDB data be shared or sold?  Yes  No

iv. Will MCDB data be used as input to develop a product (i.e., severity index tool, a risk adjustment tool, a reference tool, etc.)?  Yes  No

v. Will MCDB data be sold or shared in any format not noted above?  Yes  No

If yes, in what format and who are the purchaser of the data?

vi. Will the project result in disclosing MCDB data, or any data derived or extracted from such data, in any paper, report, website, a statistical tabulation, seminar, or another setting that is not disseminated to the public?  Yes  No

A report will be developed that uses the MCDB data to calculate the harms that the opioid epidemic has inflicted on the City of Baltimore. The City may share the report with the Baltimore City Circuit Court, and the report may not be filed publicly initially, but may be subsequently released publicly.

vii. Will the results from the project be used for price transparency?  Yes  No

viii. Will health care providers be individually identified?  Yes  No. Describe your protocol for informing health care providers prior to publication of this data/report.

## ATTACHMENT B: MCDB DATASET REQUESTED

MHCC collects privately insured data (claims and membership), known as the Medical Care Data Base (MCDB), on a quarterly basis from life and health insurance carriers, health maintenance organizations (HMOs), third party administrators (TPAs), and pharmacy benefits managers (PBMs) that are licensed to do business in Maryland. The MCDB data that is available for release contains eligibility and professional, institutional, and pharmacy claims. Starting in 2015, the Medical Care Data Base (MCDB) excludes private plan data for self-insured ERISA due to the Gobeille v. Liberty Mutual Supreme Court ruling.

The data which is refreshed and updated annually contains only privately fully-insured and self-insured non-ERISA health insurance plans for Maryland and non-Maryland residents. The MCDB encompasses about 90-95% of the privately fully insured market and 25% - 30% of the self-insured market (post-Gobeille, primarily non-ERISA). To determine the years for which data are available check on the [MHCC website](#). That site also contains information about the most current MCDB Release Version and a full list of elements in the release including the release record layouts, data dictionaries, and supporting documentation.

1. Which MCDB files are you requesting? Provide a brief justification (1-3 sentences) for each one.

Dataset	Year(s)
<input checked="" type="checkbox"/> Institutional Claims	2010 - 2020.
The MCDB institution claims are needed to report estimates of opioid-related hospitalizations and clinical services rendered in inpatient, outpatient, and emergency department treatment settings in the City of Baltimore.	
<input checked="" type="checkbox"/> Professional Claims	2010 - 2020.
The MCDB professional claims are needed to report estimates of individuals with OUD and attributable complications from ICD 9/10 diagnosis codes in the City of Baltimore.	
<input checked="" type="checkbox"/> Pharmacy Claims	2010 - 2020.
The MCDB pharmacy claims are needed to report estimates of (1) medication for addiction treatment (MAT) and naloxone dispensing for individuals with OUD, and (2) opioid prescribing among health care providers in Baltimore City.	
<input checked="" type="checkbox"/> Member Eligibility	2010 - 2020.
The MCDB member eligibility dataset is needed to report demographic characteristics of individuals who experienced opioid overdoses or have OUD in the City of Baltimore.	



## ATTACHMENT C: ADDITIONAL DATA SOURCES AND LINKAGE

### 1. Medicaid Data

Applications for access to Medicaid Managed Care data for studies comparing the privately insured to Medicaid Managed Care patients can be submitted but require a separate approval from the Maryland Medicaid Administration. The fields available on the Medicaid MCO data sets have been aligned with MCDB fields to the extent possible.

- a. Indicate whether you are seeking Medicaid data:  Yes  No
- b. Do you intend to merge or link MCBD data with Medicaid data?  Yes  No  
If yes, provide a brief justification.

Medicaid Managed Care (MCO) data will be merged to MCBD data. No individuals will be followed over time. Individuals will be de-identified prior to analysis and results will only be presented in aggregate form. Project products will protect Personal Health Information (PHI) by further aggregating data across specific groups across Baltimore City.

- c. Federal law (42 USC 1396a (a) 7) restricts the use of individually identifiable data of Medicaid recipients to uses that are directly connected to the administration of the Medicaid program. If you are requesting Maryland Medicaid Data, please describe, in the space below, why your use of the Data meets this requirement.

Provision of healthcare services for OUD falls disproportionately on Medicaid compared to other payers.<sup>6</sup> Our use of Maryland Medicaid data meets restrictions because the higher proportion of enrollees with OUD is directly connected to the administration of the Medicaid program. Estimates from the Maryland Medicaid data are needed to accurately reflect the burden of the opioid epidemic and subsequent healthcare utilization in the City of Baltimore.

6. The Medicaid and CHIP Payment and Access Commission. Report to Congress on Medicaid and CHIP June 2017. "Medicaid and the Opioid Epidemic." [<https://www.macpac.gov/wp-content/uploads/2017/06/Medicaid-and-the-Opioid-Epidemic.pdf>]

### 2. Other Linkages

Data linkage involves combining MCDB data with other data to create a more extensive database for analysis.

1. Do you intend to merge or link MCBD Data with other data?  Yes  No

If Yes:

- a. What are the files to be linked?

- b. Why is this linkage needed?

- c. Which MCDB data elements will be linked to the data elements in the external file?

- d. What methodology or algorithm will be used to create this match? If you intend to create a unique algorithm, describe how it will link each dataset.

e. What variables from each of the source files will be included in the final linked analytic file?

2. Explain why the linkages are needed.

N/A

3. Describe the specific steps the Organization will take to prevent the identification of individuals in the linked files.

N/A

## ATTACHMENT E: USE OF CONTRACTORS AND/OR CONSULTANTS (External Entities)

Provide the following information for all consultants and contractors who will have access to the MCDB data. The Requesting Organization must have a written agreement with the contractor/consultant to ensure the use of MCDB data to the approved project(s) of this application as well as the privacy and security standards set forth in the Data Use Agreement. MCDB data may not be shared with any third party without prior written consent from MHCC, or an amendment to this Application.

<b>Entity</b>	<input type="checkbox"/> Contractor <input type="checkbox"/> Subcontractor <input checked="" type="checkbox"/> Consultant				
Organization Name	Bennett Hayes Erickson				
Title	Analyst and Senior Associate				
Website					
Contact Person	Bennett Hayes Erickson				
E-Mail Address	berickson@gma-us.com				
Telephone Number					
Mailing Address	4807 NE 21st Ave				
City/Town	Portland	State	OR	Zip Code	97211
Term of Contract					

1. Describe the tasks and products assigned to this entity for this project.

Mr. Erickson is responsible for data security, data analysis, and project report generation.

2. Describe the qualifications of this entity to perform and complete the tasks.

Bennett Erickson is an Senior Associate at Greylock McKinnon where he has over 10 years of experience working with medical and pharmaceutical claims data. As an Associate, he has helped develop economic damage models and causal analyses used in civil and criminal litigation.

3. Describe the Requesting Organization's oversight and monitoring of the activities and actions of this entity for this project, including how you will ensure the privacy and security of the MCDB data to which the consultant or contractor has access.

All authorized individuals with access to the data will sign a Monument Analytics comprehensive IT policy that governs data handling, storage, and sharing. A copy is available upon request. MCDB data will be placed on a restricted access drive on the HIPAA compliant cloud system that requires two factor authentication with unique user accounts and passwords. MCDB data will be stored and analyzed on the cloud and it will not be downloaded, transferred, or distributed in any way. Only individuals listed will have access to the data – no other individuals will be granted access to the data without notification to MHCC via email within 3 days.

4. Will this entity have access to or store the MCDB data at a location other than the data custodian location, off-site server, and/or database?     Yes  No.

If yes, a separate Data Management Plan **must** be completed by this contractor/consultant.

**[INSERT A NEW SECTION FOR ADDITIONAL CONTRACTOR/CONSULTANT ENTITIES NEEDED]**

## ATTACHMENT F: APPLICANT QUALIFICATIONS

1. Describe previous experience using claims data. This question should be answered by the primary investigator/project manager and should encompass the experience of the entire project team who will be using the data.

The project team will be limited to the individuals listed in this application. Sara Gross will serve as the project applicant. Drs. Alexander, Dowdy, and Barnett will serve as primary investigators. Dr. Fernandez will serve as the project manager, and Bennett Erickson will serve as an additional resource.

- Sara Gross, JD is the Chief of the Affirmative Litigation Division of the Baltimore City Department of Law, where she represents the interests of the Mayor and City Council of Baltimore in cases where the City has a claim for damages or other relief. She obtained a Juris Doctor with honors from the University of Maryland School of Law in 2004.
- G. Caleb Alexander, MD, MS is a Co-Founder and Principal at Monument Analytics. In addition, he is a Professor of Epidemiology and Medicine at Johns Hopkins Bloomberg School of Public Health (JHSPH), where he serves as a founding co-Director of the Center for Drug Safety and Effectiveness and Principal Investigator of the Johns Hopkins-FDA Center of Excellence in Regulatory Science and Innovation. He is a practicing general internist and pharmacoepidemiologist and is internationally recognized for his expertise in prescription drug utilization, safety and effectiveness. Dr. Alexander has led or been closely involved in dozens of studies utilizing administrative claims and electronic medical record data for healthcare utilization and outcomes. Dr. Alexander received his B.A. cum laude from the University of Pennsylvania, an MD from Case Western Reserve University, and a Master of Science from the University of Chicago.
- David Dowdy, MD, PhD. ScM is jointly trained in epidemiology and internal medicine. He is an Associate Professor of Epidemiology at the Johns Hopkins Bloomberg School of Public Health and a board-certified internal medicine physician at East Baltimore Medical Center through the Baltimore Medical System (BMS). BMS serves nearly 55,000 patients in the Greater Baltimore area, primarily in low-income, underserved areas where opioid use is a major problem. He holds joint appointments in the Department of International Health and the Division of General Internal Medicine. Dr. Dowdy received his BS in chemistry from Duke University and ScM, MD, and PhD degrees from Johns Hopkins University before completing residency training in internal medicine at the University of California, San Francisco. Dr. Dowdy has published over 250 peer-reviewed articles in the scientific literature and been the first or senior author on over 135. In recent years, Dr. Dowdy has applied disease modeling methodologies to understanding the opioid epidemic in the U.S.
- Michael Barnett, MD, MS is Assistant Professor of Health Policy and Management at the Harvard T.H. Chan School of Public Health and a primary care physician at Brigham and Women's Hospital. Dr. Barnett's research focuses on using claims data and other data sources to study high-risk medications, organization of primary and specialty care, and most recently, the impact of the COVID-19 pandemic on nursing homes. He is the recipient of multiple research awards including citations for best research of the year from the Society of General Internal Medicine, National Institute of Healthcare Management, and AcademyHealth.
- Elena Fernandez, PharmD, PhD (Pharmacist and Economic Modeler) is a Manager at Monument Analytics and specializes in pharmacoepidemiology and health outcomes. She received her PhD from the Department of Pharmacotherapy and Outcomes Sciences at Virginia Commonwealth University, where she designed and conducted research using electronic medical health record and pharmacy claims data to evaluate opioid utilization in cancer survivors. She has experience analyzing health outcomes with health system claims data. She also received a Doctor of Pharmacy from Virginia Commonwealth University and a BS in biochemistry from the University of Mary Washington.
- Bennett Erickson is a Senior Associate at Greylock McKinnon where he has over 10 years of experience working with medical and pharmaceutical claims data. As an Associate, he has helped develop economic damage models and causal analyses used in civil and criminal litigation.


2. Resumes/CVs: When submitting your Application package, include résumés or curricula vitae of the principal investigator/project manager and any project team with relevant experience

## ATTACHMENT G: OBLIGATIONS AND ATTESTATION

### ATTESTATION OF APPLICANT


I, Sara Gross, JD, Applicant, solemnly affirm under penalties of perjury that the information contained in the Application its attachments, and this Attestation, is true and correct to the best of my knowledge, information and belief and that the requested MCDB data is the minimum necessary to accomplish the Project. I accept my obligation to comply with all requirements in this Application and attachments, including:

- (1) Compliance with all data privacy and security obligations;
- (2) Execution of a Data Use Agreement approved by MHCC-staff prior to receipt of the requested data;
- (3) Responsibility for assuring that the data has been destroyed at the conclusion of the project in accordance with the terms and conditions of the Data Use Agreement;
- (4) Responsibility for assuring that specified MHCC staff is notified within 30 days when any person who has access to the MCDB data is removed from or added to the MHCC-approved Project;
- (5) Responsibility for assuring that each required report is sent to the MHCC staff within the time period specified in the Data Use Agreement; and
- (6) Continuing compliance with the Data Management Plan.

Applicant's signature:	
<b>Printed Name:</b>	Sara Gross, JD
Title:	Chief Solicitor
Date:	8/29/2022

### ATTESTATION OF REQUESTING ORGANIZATION

I, Sara Gross, JD, Chief Solicitor of Baltimore City Law Department, the Requesting Organization in this Application, have been duly authorized by the Requesting Organization to execute this attestation on its behalf. I solemnly affirm under penalties of perjury that the information contained in the Application, its attachments, and this Attestation, is true and correct to the best of my knowledge, information, and belief.

Signature of authorized representative of the Requesting Organization:	
<b>Printed Name:</b>	Sara Gross, JD
Title:	Chief Solicitor
Date:	8/29/2022



1019 39th Ave SE / Suite 120  
Puyallup, WA 98374  
855-818-2289  
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October 11, 2021

G. Caleb Alexander, MD, MHS  
Monument Analytics  
PO Box 20862  
Baltimore, Maryland 21209

David Dowdy, MD, PhD, ScM  
615 North Wolfe St., E6531  
Baltimore, Maryland 21205

Michael Barnett, MD, MS  
677 Huntington Avenue, Room 407  
Boston, Massachusetts 02115

Dear Dr. Alexander, Dr. Dowdy, and Dr. Barnett:

**SUBJECT: IRB EXEMPTION—REGULATORY OPINION**  
Investigators: G. Caleb Alexander, David Dowdy, Michael Barnett  
Protocol Title: Assessing Extent of Opioid Epidemic in Baltimore City: A  
Retrospective Cohort Analysis

This is in response to your request for an exempt status determination for the above-referenced protocol. WCG IRB's IRB Affairs Department reviewed the study under the Common Rule and applicable guidance.

We believe the study is exempt under 45 CFR § 46.104(d)(4), because the research involves the use of identifiable private information/biospecimens; and information, which may include information about biospecimens, is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained directly or through identifiers linked to the subjects, the investigator does not contact the subjects, and the investigator will not re-identify subjects.

This exemption determination can apply to multiple sites, but it does not apply to any institution that has an institutional policy of requiring an entity other than WCG IRB (such as an internal IRB) to make exemption determinations. WCG IRB cannot provide an exemption that overrides the jurisdiction of a local IRB or other institutional mechanism for determining exemptions. You are responsible for ensuring that each site to which this exemption applies can and will accept WCG IRB's exemption decision.

WCG IRB's determination of an Exemption only applies to US regulations; it does not apply to regulations or determinations for research conducted outside of the US. Please discuss with the local IRB authorities in the country where this activity is taking place to determine if local IRB review is required.

Please note that any future changes to the project may affect its exempt status, and you may want to contact WCG IRB about the effect these changes may have on the exemption status before implementing them. WCG IRB does not impose an expiration date on its IRB exemption determinations.

If you have any questions, or if we can be of further assistance, please contact R. Bert Wilkins, J.D., M.H.A., C.I.P., at 360-252-2852, or e-mail [RegulatoryAffairs@wirb.com](mailto:RegulatoryAffairs@wirb.com).

RBW:mr  
D4-Exemption-Alexander (10-11-2021)  
cc: Elena Fernandez, Monument Analytics  
WCG IRB Accounting  
WCG IRB Work Order #1-1482933-1

**CURRICULUM VITAE**  
G. Caleb Alexander, MD, MS

**PERSONAL DATA**

*Business Address*

Johns Hopkins School of Public Health  
Center for Drug Safety and Effectiveness  
Department of Epidemiology  
615 N. Wolfe Street W6035  
Baltimore, MD 21205  
Phone: 410 955 8168  
Fax: 410 955 0863  
Email: galexand@jhsph.edu

*Clinical Address*

Johns Hopkins at Green Spring Station  
10753 Falls Road Suite 325  
Lutherville, MD 21093  
Clinic Phone: 410 583 2926  
Clinic Fax: 410 583 2883

**EDUCATION AND TRAINING**

1988-1990	Candidate for BA, Oberlin College
1991-1993	University of Pennsylvania, BA (Philosophy)
1994-1998	Case Western Reserve University, MD
1998-1999	Intern, Internal Medicine, University of Pennsylvania
1999-2001	Resident, Internal Medicine, University of Pennsylvania
2001-2003	Robert Wood Johnson Clinical Scholar, University of Chicago
2002-2003	University of Chicago, Department of Health Studies, MS

*Medical Licensure*

Maryland Physician and Controlled Substance License, through 6/30/24  
Drug Enforcement Agency Controlled Substance Licensure, through 6/30/24

*Medical Board Certification*

American Board of Internal Medicine, through 12/31/22

**PROFESSIONAL EXPERIENCE**

2001-2003	Off-tour Attending Physician, Veterans Affairs Hospital, Hines, Illinois
2003-2005	Instructor, Division of General Medicine, University of Chicago
2003-2006	Affiliate Faculty, Robert Wood Johnson Clinical Scholars Program
2003-2012	Affiliate Faculty, MacLean Center for Clinical Medical Ethics
2005-	Adjunct Research Associate, Department of Pharmacy Practice, University of Illinois at Chicago School of Pharmacy
2005-2011	Assistant Professor, Division of General Medicine, University of Chicago



2007-2012	Affiliate Faculty, Center for Interdisciplinary Health Disparities Research (CIHDR), University of Chicago
2011-2012	Associate Professor, Division of General Medicine, University of Chicago
2012-	Founding Co-Director, Johns Hopkins Center for Drug Safety and Effectiveness Hopkins University
2012-2018	Associate Professor of Epidemiology and Medicine, Johns Hopkins Bloomberg School of Public Health
2014-	Affiliate Faculty, Center for Health Services and Outcomes Research (CHSOR), Johns
2018-	Professor of Epidemiology and Medicine, Johns Hopkins Bloomberg School of Public Health

## PROFESSIONAL ACTIVITIES

### *Society Membership and Leadership*

1998-2001	Philadelphia County Medical Society
1998-2009	American Medical Association
1998-	Physicians for Social Responsibility
1998-	Alpha Omega Alpha Medical Honors Society
2000-	Society for General Internal Medicine
2000-	American College of Physicians
2003-2009	American Society of Bioethics and Humanities
2006-2007	Chair, Program Committee, RWJ Faculty Scholars National Meeting
2006	Member, Program Committee, RWJ Faculty Scholars National Meeting
2007-	International Society for Pharmacoeconomics and Outcomes Research (ISPOR)
2008	Selection Committee, Midcareer Research Mentorship Award, SGIM
2009-	International Society for Pharmacoepidemiology (ISPE)

### *Non-Commercial Advisory Boards*

2000-2003	Transplant Task Force, End Stage Renal Disease Renal Network #9/#10
2005	American Society of Bioethics and Humanities President's Advisory Committee on Ethics Standards
2007-2011	Cost of Cancer Care Task Force, American Society of Clinical Oncology
2008-2016	Charter Member, IMS Health Services Research Network
2010-2014	FDA, Drug Safety and Risk Management Advisory Committees, Ad Hoc Member <ul style="list-style-type: none"> <li>• October 2010 Cardiovascular and Renal Committee (Darbapoeitin)</li> <li>• October 2012 Endocrinologic and Metabolic Committee (lomitapide/mipomersen)</li> <li>• July 2013 Arthritis Committee (Criteria for axial spondyloarthritis)</li> <li>• November 2013 Peripheral &amp; Central Nervous System Committee (Alemtuzumab)</li> <li>• May 2014 Public Meeting (Post Marketing Requirements for Opioid Analgesics)</li> <li>• July 2015 Bone, Reproductive and Urologic Drugs Committee (Flibanserin)</li> <li>• December 2015 Pulmonary &amp; Allergy Drugs Committee (Cough Syrup/Codeine)</li> <li>• October 2016 Bone, Reproductive and Urologic Drugs Committee (desmopressin)</li> <li>• November 2017 Psychopharmacologic Drugs Advisory Committee (buprenorphine)</li> </ul>
2014-2019	Chairman, FDA Peripheral and Central Nervous System Drugs Advisory Committee <ul style="list-style-type: none"> <li>• November 2015 Peripheral &amp; Central Nervous System Committee (Drisapersen)</li> <li>• April 2016 Peripheral &amp; Central Nervous System Committee (Eterplirsen)</li> <li>• April 2018 Peripheral &amp; Central Nervous System Committee (Cannabidiol)</li> </ul>
2020-	Member, FDA Peripheral and Central Nervous System Drugs Advisory Committee <ul style="list-style-type: none"> <li>• November 2020 Peripheral &amp; Central Nervous System Committee (Aducanumab)</li> </ul>

2015-2018 Center of Excellence for Comparative Effectiveness, University of Illinois at Chicago  
 2015-2017 Legal Science, LLC, contract through National Institutes of Drug Abuse to develop Prescription Drug Abuse Policy System  
 2016- Scientific Advisory Board, Media Policy Center, Santa Monica, California  
 2016 Facilitator, Prioritizing Comparative Effectiveness Research Questions for Preventing Opioid Misuse in the Management of Pain: A Stakeholder Workshop (PCORI)  
 2020-2021 U.S. Department of Health and Human Services, National Center for Health Statistics (NCHS), National Ambulatory Medical Care Survey (NAMCS) Workgroup  
 2020 Member, FDA Peripheral and Central Nervous System Drugs Advisory Committee  
 2020 National Academies of Science, Engineering and Medicine (NASEM). Equitable Distribution of a COVID-19 Vaccine. Reviewer.  
 2020-2021 Scientific Advisory Board. Spreading the Word: Training Journalists and Researchers to Communicate PCORI Comparative Effectiveness Research Findings.  
 2021 Agency for Healthcare Research and Quality (AHRQ). Integrated Pain Management Programs: An Evidence-based Practice Center Review. Technical Expert Panelist.

*Commercial Advisory Boards*

2007-2018 IQVIA Institute for Healthcare Informatics  
 2014-2016 PainNavigator, LLC, Minneapolis, Minnesota  
 2015-2019 Delta Faucet Company, Indianapolis, Indiana  
 2016-2018 MesaRx Innovations, New York, New York  
 2017- OptumRX National P&T Committee

*Other Commercialization Activity*

2017- Co-Founder, Monument Analytics, A Health Care Consultancy

*Testimony and Briefings (Non-Litigation)*

2012 Food and Drug Administration (Drug Labeling for Prescription Opioids)  
 2015 U.S. Senate Veterans' Affairs Committee (Prescription Opioids)  
 2016 Centers for Disease Control and Prevention (Prescription Opioids)  
 2016 Committee on Health and Government Operations, Maryland House of Delegates (Prescription Drug Monitoring Programs)  
 2016 Food and Drug Administration (Prescription Opioids)  
 2016 National Academy of Sciences, Institute of Medicine (Regulation of Opioids)  
 2017 Senate Finance Committee, Maryland House of Delegates (Prescription Drug Pricing)  
 2017 U.S. House of Representatives, Congressional Oversight Committee (Opioid Epidemic)  
 2018 Briefing for U.S. Senate Staff Hosted by Senator Ben Cardin (Opioid Epidemic)  
 2018 National Academy of Science, Engineering and Medicine (FDA Opioid Regulation)  
 2019 Maryland House of Delegates (Prescription Drug Monitoring Program)  
 2019 National Academy of Science, Engineering and Medicine (Non-pharmacologic pain management)

**EDITORIAL ACTIVITIES**

*Peer Review Activities*

*Ad hoc reviewer – Journals*

American Journal of Kidney Diseases	Annals of Internal Medicine
American Journal of Managed Care	Archives of Internal Medicine
American Journal of Medicine	BioMed Central (BMC) Gastroenterology
American Journal of Preventive Medicine	BioMed Central (BMC) Infectious Diseases
American Journal of Public Health	British Journal of Cancer

British Medical Journal  
 Canadian Medical Association Journal  
 Clinical Therapeutics  
 CNS Drugs  
 Disease Management and Health Outcomes  
 Drugs  
 Health Affairs  
 Health Services Research  
 Hypertension  
 International Journal of Quality Improvement  
 JAMA  
 Journal of American College Health

Journal of the American Pharmacists Association  
 Journal of the American Society of Nephrology  
 Journal of Clinical Ethics  
 Journal of General Internal Medicine  
 Journal of Rural Health  
 Medical Care  
 Medical Decision Making  
 Milbank Quarterly  
 New England Journal of Medicine  
 Pharmacoeconomics  
 Pharmacoepidemiology and Drug Safety  
 Social Science and Medicine

***Editorial Board Memberships***

2007-2010	Medical Decision Making, Deputy Editor
2008-2012	Journal of General Internal Medicine, Deputy Editor
2008-2010	Society of General Internal Medicine Forum, Associate Editor
2010-2011	BMC Health Services Research, Associate Editor
2012-2014	Journal of the American Pharmacists Association (JAPhA), Editorial Board
2012-2014	Journal of General Internal Medicine, Editorial Board
2012-	Medical Care, Deputy Editor
2013-	Drug Safety, Editorial Board
2014-	Drugs – Real World Outcomes, Editorial Board

***Grant Reviews***

1. The Netherlands Organization for Health Research and Development (ZonMw), The Ministry of Health, Welfare, and Sport, The Hague, The Netherlands (2007)
2. The University of Chicago Program for Pharmaceutical Policy (2007-2010)
3. University of Chicago/University of Illinois at Chicago CDC Center for Health Promotion Economics (2007)
4. The University of Chicago Diabetes Research and Training Center (2008).
5. Agency for Healthcare Research and Quality, Special Emphasis Panel (R18), “Optimizing Prevention and Healthcare Management for the Complex Patient.” March 2008.
6. RFA 09-003. NIH Challenge Grants in Health and Science Research (RC21). April 2009.
7. National Institute of Aging Special Emphasis Panel (PO1). Medical Professionalism and Healthcare Grants. November 2009.
8. Agency for Healthcare Research and Quality Special Emphasis Panel (R18). Comparative Effectiveness Delivery System Demonstration Grants. July 2010.
9. Agency for Healthcare Research and Quality. Centers for Education and Research in Therapeutics (CERT) (U-19) Special Emphasis Panel. July 2011.
10. Swiss National Science Foundation. Drug Lag in Switzerland: Does it Exist and Why? June 2012.

11. Dutch Ministry of Health Grant Review. Optimizing the use of Over-the-Counter Medicines. October 2012.
12. Qatar National Research Fund Reviewer. November 2012.
13. Veterans Health Affairs Health Services Research and Development (HSR&D) Center of Innovation Review. February 2012.
14. Ad hoc reviewer. Agency for Healthcare Research and Quality. Health Care Research Training (HCRT) Study Section. January 2014 – July 2015.
15. Ad hoc reviewer. Canadian Institutes of Health Research (CIHR). Review Committee for the Drug Safety and Effectiveness Network (DSEN) and the Strategy for Patient-Oriented Research (SPOR) Catalyst Grant: Methods in Post-Market Drug Safety and Effectiveness Research. January 2015.
16. Study section member. Agency for Healthcare Research and Quality. Health Care Research Training (HCRT) Study Section. August 2015 – July 2018.
17. Chairman. Patient Centered Outcomes Research Institute. Clinical Strategies for Managing and Reducing Long-Term Opioid Use for Chronic Pain Merit Review. May 2016.
18. Chairman. Patient Centered Outcomes Research Institute. Clinical Strategies for Managing and Reducing Long-Term Opioid Use for Chronic Pain Merit Review. May 2017.
19. Chairman. Patient Centered Outcomes Research Institute. Assessment of Prevention, Diagnosis, and Treatment Options (APDTO) Program. August 2017.
20. Ad hoc reviewer. Johns Hopkins Center for Injury Research and Policy. June 2020.
21. Ad hoc reviewer. National Institute on Drug Abuse Special Emphasis Panel. Pediatric Formulations and Drug Delivery Systems and Psychoactive Surveillance. August 2020.
22. Technical Expert. Integrated Pain Management Programs and Multidisciplinary, Multi-modal Treatment Models. Agency for Healthcare Research and Quality. April 2021.
23. Ad hoc reviewer. Robert Wood Johnson Foundation. Health Data for Action (Data Access Award). May 2021.
24. Ad hoc reviewer. Decoding Disparities QuickFire Challenge. Johnson and Johnson Innovation. August 2021.
25. Chairman. American Rescue Plan Act of 2021: State Planning Grants for Qualifying Community-Based Mobile Crisis Intervention Services. Centers for Medicare and Medicaid Services. September 2021.

## **HONORS AND AWARDS**

### *Honors*

- |      |  |
|------|--|
| 1993 | Cum Laude, University of Pennsylvania              |
| 1997 | Alpha Omega Alpha, Case Western Reserve University |

2003-2005	John A. Oremus Memorial Scholar (\$40,000 Research Stipend), MacLean Center for Medical Ethics, University of Chicago
2006	Top 5% of reviewers, Medical Care (also received annually through 2011)
2007	Top 10% of reviewers, Ann Intern Med (also received 2008, 2009, 2014)
2011	Elected Fellow of the American College of Physicians (FACP)
2011	Top Reviewers, Pharmacoepidemiology and Drug Safety (annually through 2014)

#### *Awards*

2001	Edward W. Holmes Resident Research Award, University of Pennsylvania
2006-2009	Robert Wood Johnson Foundation Faculty Scholar Career Development Award
2007	Research Finalist, International Society for Pharmacoeconomics and Outcomes Research, Annual Meeting
2008	Outstanding Physician Scientist Award, Central Society for Clinical Research
2008	Career development award (\$10,000 Research Stipend), Central Society for Clinical Research
2008	Department of Medicine Research Award (awarded to trainee for mentored research; also received by mentored trainees in 2009 and 2010)
2009	Pritzker School of Medicine Sigma Xi Award for Impact on Science (awarded to trainee for mentored research)
2017	American Society of Health-System Pharmacy, Drug Therapy Research Award (awarded to trainee for mentored research and cv publication #144)
2020	Robert C. Witt Award, Best Article in Journal of Risk and Insurance (Publication #197)

## **PUBLICATIONS**

### *Peer Reviewed Journal Articles (names of trainees are underlined)*

1. Szele F, **Alexander GC**, Chesselet MF. "Expression of molecules associated with neuronal plasticity in the striatum after aspiration versus thermocoagulatory lesions in the adult cortex in adult rats." Journal of Neuroscience. 1995;15:4429-4448. PMID: 7790918
2. **Alexander GC**, Fera B, Ellis R. "From the students: learning continuous improvement by doing it." Joint Commission Journal on Quality Improvement. 1996;22:198-205. PMID: 8664952
3. **Alexander GC**, Sehgal AR. Dialysis patient assessments of the quality of medical care provided by generalists, nephrologists and other specialists. American Journal of Kidney Disease. 1998;32:284-289. PMID: 9708614
4. **Alexander GC**, Sehgal AR. Barriers to cadaveric renal transplantation among blacks, women, and the poor. JAMA. 1998;280:1148-1152. PMID: 9777814  
 Editorial: Milford EL. Organ transplantation--barriers, outcomes, and evolving policies. JAMA. 1998;280:1184-1185. PMID: 9777820
5. Lewin L, Agneberg B, **Alexander GC**. A course in end-of-life care for third year medical students. Academic Medicine. 2000;57:519-520. PMID: 10824792
6. **Alexander GC**, Sehgal AR. Why hemodialysis patients fail to complete the transplant process. American Journal of Kidney Disease. 2001;37:321-328. PMID: 11157373  
 Editorial: Chertow GM, Zenios SA. Gridlock on the road to kidney transplantation. American Journal of Kidney Disease. 2001;37:435-437. PMID: 11157389

7. Werner RM, **Alexander GC**, Fagerlin A, Ubel PA. The "hassle factor": How physicians respond when third party payers decline reimbursement for important health care services. *Archives of Internal Medicine*. 2002;162:1134-1139. PMID: 12020183
8. **Alexander GC**, Sehgal AS. Variation in access to kidney transplantation across dialysis facilities: using process of care measures for quality improvement. *American Journal of Kidney Disease*. 2002;40:824-831. PMID: 12324919  
     Editorial: Powe NR, Boulware LE. The uneven distribution of kidney transplants: getting at the root causes and improving care. *American Journal of Kidney Disease*. 2002;40:861-863. PMID: 12324926
9. **Alexander GC**, Werner RM, Fagerlin A, Ubel PA. Public support for physician deception of insurance companies. *Annals of Internal Medicine*. 2003;138:472-475. PMID: 12639080
10. **Alexander GC**, Wynia MK. Ready and willing? Physicians' sense of preparedness for bioterrorism. *Health Affairs*. September/October 2003;22:189-197. PMID: 14515895
11. **Alexander GC**, Casalino LP, Meltzer DO. Patient-physician communication about out-of-pocket costs. *JAMA*. 2003;290:953-958. PMID: 12928475
12. **Alexander GC**, Werner RM, Ubel PA. The costs of denying scarcity. *Archives of Internal Medicine*. 2004;164:593-596. PMID: 15037486
13. **Alexander GC**, Casalino LP, Tseng CW, McFadden D, Meltzer DO. Barriers to patient-physician communication about out-of-pocket costs. *Journal of General Internal Medicine*. 2004;19:856-860. PMCID: PMC1492500
14. **Alexander GC**, Tseng CW. Strategies to identify and assist patients burdened by out-of-pocket prescription costs. *Cleveland Clinic Journal of Medicine*. 2004;71:433-437. PMID: 15195778
15. Werner RM, **Alexander GC**, Fagerlin A, Ubel PA. Lying to insurance companies: the desire to deceive among physicians and the public. *American Journal of Bioethics*. 2004;4:1-7. PMID: 16192208
16. Dai C, Stafford RS, **Alexander GC**. National trends in Cox-2 inhibitor use since market release: non-selective diffusion of a selectively cost-effective innovation. *Archives of Internal Medicine*. 2005;165:171-177. PMID 15668363  
     Editorial: Solomon DH, Avorn J. Coxibs, science, and the public trust. *Archives of Internal Medicine*. 2005;165:158-160. PMID: 15668360
17. **Alexander GC**, Casalino LP, Metlzer DO. Physician strategies to reduce patients' out-of-pocket prescription costs. *Archives of Internal Medicine*. 2005;165:633-636. PMID: 15795338
18. Buss MK, **Alexander GC**, Switzer GE, Arnold RM. Assessing competence of residents to discuss end-of-life issues with patients. *Journal of Palliative Medicine*. 2005;8:363-371. PMID: 15890047
19. Lang P, Schwarze M, **Alexander GC**. New technologies meeting old professional boundaries: the emergence of carotid artery stenting. *Journal of the American College of Surgery*. 2005;200:854-860. PMID: 15922195

20. **Alexander GC**, Mohajir N, Meltzer DO. Consumers' perceptions about risk of and access to nonprescription medications. *J Am Pharm Assoc.* 2005;45:363-70. PMID: 15991758
21. Wang YR, **Alexander GC**, Meltzer DO. Lack of effect of guideline changes on LDL cholesterol reporting and control for diabetes visits in the U.S., 1995-2004. *Diabetes Care.* 2005;28:2942-4. PMID: 16306559
22. **Alexander GC**, Kurlander J, Wynia MK. Physicians in retainer (“conciierge”) practice: a national survey of physician, patient, and practice characteristics. *Journal of General Internal Medicine.* 2005;20:1079-83. PMCID: PMC1490281
23. **Alexander GC**, Lantos J. The doctor-patient relationship in the post-managed care era. *American Journal of Bioethics.* 2006;6:29-32. PMID: 16423784
24. Wang YR, **Alexander GC**, Meltzer DO. Screening and use of cholesterol-lowering drug therapy for primary and secondary prevention of coronary heart disease, 1999 and 2003. *Managed Care Interface.* 2006;19:25-30. PMID: 16453992
25. Piette J, Heisler M, Horne R, **Alexander GC**. A conceptually-based approach to understanding chronically-ill patients’ responses to medication cost pressures. *Social science and medicine.* 2006;62:846-857. PMID: 16095789
26. Holmes HM, Cox-Hayley DM, **Alexander GC**, Sachs GA. Reconsidering medication appropriateness for patients late in life. *Archives of Internal Medicine.* 2006;166:605-609. PMID: 16567597
27. Schwarze ML, Sayla MA, **Alexander GC**. Exploring patient preferences for infrainguinal bypass surgery. *Journal of the American College of Surgery.* 2006;202:445-452. PMID: 16500249
28. **Alexander GC**, Delisser HM, Hansen-Flaschen J, Lantos J. Shoring up professionalism: building upon disagreements between house officers and attending physicians. *Canadian Family Physician.* 2006;52:286-287. PMCID: PMC1479701
29. **Alexander GC**, Sayla MA, Holmes HM, Sachs GA. Prioritizing and stopping prescription medicines. *Canadian Medical Association Journal.* 2006;174:1083-1084. PMCID: PMC1421477
30. **Alexander GC**, Hall M, Lantos J. Rethinking professional ethics in the cost-sharing era. *American Journal of Bioethics.* 2006;6:W17-W22. PMID: 16885085
31. Federman AD, **Alexander GC**, Shrank WH. Simplifying the Medicare Prescription Drug Benefit for physicians and patients. *Mayo Clinic Proceedings.* 2006;81:1217-1221. PMID: 16970218
32. Quinn MT, **Alexander GC**, Hollingsworth D, O’Connor KG, Meltzer DO, for the Corporate Contributions for Life Consortium. Design and evaluation of a workplace intervention to promote organ donation. *Progress in Transplantation.* 2006;16:253-259. PMID: 17007162
33. Colker TR, Casalino LP, **Alexander GC**, Lantos J. Should our well-child care system be redesigned? A national survey of pediatricians. *Pediatrics.* 2006;118:1852-1857. PMID: 17079554

34. **Alexander GC**, Larkin G, Wynia MK. Preparedness for bioterror and competing public health priorities: a national survey of primary care and emergency physicians. *Academic Emergency Medicine*. 2006;13:1238-1241. PMID: 16614456
35. Wang YR, **Alexander GC**, Stafford RS. Outpatient treatment and control of hypertension in Western Europe and the United States. *Archives of Internal Medicine*. 2007;167:141-147. PMID: 17242314
36. Schwarze ML, Sayla MA, **Alexander GC**. A comparison of patient and physician beliefs about infrainguinal bypass surgery: what role should surgical optimism play? *Surgery*. 2007;141:239-244. PMID: 17263981
37. Casalino LP, **Alexander GC**, Jin L, Konetzka T. General internists' views on pay-for-performance and public reporting of quality scores: a national survey. *Health Affairs*. 2007;26:492-499. PMID: 1733967
38. Pham HH, **Alexander GC**, O'Malley AS. Physician consideration of patients' out-of-pocket costs in making common clinical decisions. *Archives of Internal Medicine*. 2007;167:663-668. PMID: 17420424
39. Torke A, **Alexander GC**, Lantos J, Siegler M. The doctor-surrogate relationship. *Archives of Internal Medicine*. 2007;167:1117-1121. PMID: 17563018
40. Kuwabara SA, Van Voorhees BW, Gollan JK, **Alexander GC**. A qualitative exploration of depression in emerging adulthood. *General hospital psychiatry*. 2007;29:317-324. PMID: PMC2769013
41. Tseng CW, Brook RH, Keeler E, Steers WN, **Alexander GC**, Waitzfelder BE, Mangione CM. Elderly patients' preferences and experiences with providers in managing their drug costs. *Journal of the American Geriatrics Society*. 2007;55:1974-1980. PMID: 1794489
42. Phongsak SK, Wynia MK, Gadon M, **Alexander GC**. Original Communication: A Qualitative Study of Physicians' Engagement in Reducing Health Care Disparities. *Journal of the National Medical Association*. 2007;99:1315-1322. PMID: PMC2575935
43. Yin W, Basu A, Zhang J, Rabbani A, Meltzer DO, **Alexander GC**. Impact of the Medicare Part D Prescription Drug Benefit on drug utilization and out-of-pocket expenditures. *Annals of Internal Medicine*. 2008;148:169-177. PMID: 18180465
- Editorial: Stuart B. Where are the Medicare Part D claims data? *Annals of Internal Medicine*. 2008;148:1-2. PMID: 18180463
44. **Alexander GC**, Zhang J, Basu A. Characteristics of patients receiving pharmaceutical samples and association between sample receipt and out-of-pocket prescription costs. *Medical Care*. 2008;46:394-402. PMID 18362819
45. **Alexander GC**, Lin S, Sayla M, Wynia MK, Writing for the Data Committee of the Commission to End Health Care Disparities. Development of a measure of physician engagement in addressing racial and ethnic health care disparities. *Health Services Research*. 2008;43(2):773-84. PMID: PMC2442375
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48. Barrett K, Lucas E, **Alexander GC**. How Polypharmacy Has Become a Medical Burden Worldwide. *The Pharmaceutical Journal*. June 9, 2016. Available at: <http://www.pharmaceutical-journal.com>
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50. **Alexander GC**. In Ali AK, Hartzema AG (eds). *Post-Authorization Safety Studies of Medicinal Products: The PASS Book*. In press. (Forward)
51. Qato DM, **Alexander GC**, Lindau ST. AAP’s Section on Integrative Medicine Suggests a More Balanced Approach to Dietary Supplement Data – In Reply. *Pediatrics*. In press.
52. Herder MR, Doshi P, Wallach JD, et al. FDA to Begin Releasing Clinical Study Reports in Pilot Programme. *BMJ*. 2018;360:k294. (Letter to the editor)
53. Mudumbai S, Stafford RS, **Alexander GC**. Having Surgery? Beware of Risk from Post-Op Opioids. *USA Today*. February 12, 2019. (Op-Ed)
54. **Alexander GC**, Sharfstein J. Opioid epidemic: Fighting addiction and chronic pain together to save lives. *USA Today*. April 25, 2019. (Op-Ed)
55. **Alexander GC**, Kolodny A. In Reply: Initial Opioid Prescriptions Among U.S. Commercially Insured Patients, 2012-2017. *New England Journal of Medicine*. May 2019. (Letter to editor)
56. Heyward J, Sharfstein S, **Alexander GC**. Assessing the Opioid Analgesic Risk Evaluation and Mitigation Strategy Program—Reply. *JAMA Internal Medicine*, 2020. (Invited response to letter to the editor)
57. **Alexander GC**, Kesselheim AS, Moore TJ. Searching for an Effective Covid-19 Treatment: Promise and Peril. *STAT*. April 10, 2020. (Op-Ed)
58. Rashidi E, Andersen KM, Akenroye A, Xu Y, **Alexander GC**, Mehta H. In Reply: In-Hospital Use of Statins Is Associated with a Reduced Risk of Mortality among Individuals with COVID-19 – Reply. *Cell Metabolism*. September 2020. (Comment to Editorial Board)
59. Qato DM, **Alexander GC**, Lindau ST. Access to Pharmacist-Prescribed and Emergency Contraception in Los Angeles County, 2017—Reply. *Health Affairs*, 2020. (Invited response to letter to the editor)

60. Wang L, Paller CJ, Hong H, De Felice A, **Alexander GC**, Brawley O. Comparison of Systemic Treatments for Metastatic Castration-Sensitive Prostate Cancer: A Systematic Review and Network Meta-analysis. – In Reply.
61. Alinsky R, **Alexander GC**. Opioid Use Disorder During Pregnancy: Long-term Developmental Outcomes. Dev Med Child Neurol. 2021 Sep;63(9):1016. doi: 10.1111/dmcn.14972. Epub 2021 Jun 28. PMID: 34181246. (Invited Commentary)
62. Grecius M, **Alexander GC**. This Alzheimer’s Drug Doesn’t Merit Government Approval. New York Times. May 2021. (Op-Ed)
63. Yang X, Sun J, Patel RC, Zhang J, Guo S, Zheng Q, Olex AL, Olatosi B, Weissman SB, Islam JY, Chute CG, Haendel M, Kirk GD, Li X, for the National COVID Cohort Collaborative (N3C) Consortium. Under development. (Consortium Author)

*Monographs, book chapters and other scientific reports*

1. **Alexander GC**, Wynia MK. Survey research in bioethics. In “Empiric Methods for Bioethics: A Primer.” Eds: Jacoby L, Siminoff LA. Elsevier Press, New York, New York, 2007”.
2. Quinn MT, Gnepp J, **Alexander GC**, Hollingsworth D, O’Connor KG, Lang W, Klayman J, Meltzer DO. Design and Evaluation of Worksite Promotions of Organ Donation: Real-world Challenges and Practical Solutions. In “Understanding organ donation: applied behavioral science perspectives.” Eds: Siegel JT, Alvaro EM. Blackwell/Claremont Applied Social Psychology Series. Wiley-Blackwell, Chichester, West Sussex, United Kingdom, 2010.
3. Saunders M, **Alexander GC**, Siegler M. Clinical ethics and the practice of hospital medicine. In “Principles and Practice of Hospital Medicine.” Eds: McKean, Ross, Dressler, Brotman, Ginsberg. McGraw-Hill Companies, 2012 (2<sup>nd</sup> Edition printed 2016).
4. **Alexander GC**, Frattaroli S, Gielen AC, eds. The Prescription Opioid Epidemic: An Evidence-Based Approach. Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland: 2015
5. Citizen Petition to the Food and Drug Administration (Signatory). Requesting that the Commission to the FDA place a black box warning on pharmaceuticals in the opioid and benzodiazepine classes warning patients of the potential serious risks with concomitant use of both classes of medications. Submitted February 22, 2016. Petition granted August 31, 2016. Petition available at: [http://health.baltimorecity.gov/sites/default/files/Final%20Draft%20FDA%20petition-Full%20Co-Signers-2.19.16%20\(2\)%20\(1\).pdf](http://health.baltimorecity.gov/sites/default/files/Final%20Draft%20FDA%20petition-Full%20Co-Signers-2.19.16%20(2)%20(1).pdf) (Accessed September 1, 2016).
6. Working Group Member. Transparency at the U.S. Food and Drug Administration: Recommendations to Support the Development of Safe and Effective Medical Products. October 2016.
7. Working Group Member. Partnership Forum: Navigating Innovations in Diabetes Care. Journal of Managed Care and Specialty Pharmacy. December 2016.
8. Sharfstein JM, Miller JD, Davis AL, Ross JS, McCarthy ME, Smith B, Chaudhry A, Alexander GC, Kesselheim AS. Blueprint for Transparency at the U.S. Food and Drug Administration: Recommendations to Advance the Development of Safe and Effective Medical Products. January 22, 2017.
9. **Alexander GC**, Frattaroli S, Gielen AC, eds. The Opioid Epidemic: From Evidence to Impact. Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland: 2017.
10. Bicket MC, **Alexander GC**. Prescribing Guidelines and Opioid Stewardship. In “The Public Health Guide to Ending the Opioid Epidemic.” Prescribing Guidelines and Opioid Stewardship. In: A Public Health Guide to Ending the Opioid Epidemic. Edited by Michael R. Fraser PhD MS, Jay C. Butler MD and Philicia Tucker MPH, Oxford University Press (2019). DOI: 10.1093/oso/9780190056810.003.0023

*Other*

Designed and hosted a web site devoted to patient education and empowerment regarding prescription costs and polypharmacy. Previously available (2005-2012) at: <http://prescriptions.bsd.uchicago.edu/>

**CURRICULUM VITAE**  
G. Caleb Alexander, MD, MS

PART II

**TEACHING AND MENTORING (Johns Hopkins University, 2012-present)**

*Undergraduate students*

- Ian Day; Academic Advisor for Special Public Health Honors Thesis, 2020-2021

*Graduate students (iMPH or MPH Advisor)*

- Vibhuti Arya, PharmD; Academic Advisor for Part-time iMPH Program, 2012-2016
- Haley Gibbs, PharmD; Academic Advisor for Part-time iMPH Program, 2012-2015
- Ayu Katada; Academic Advisor for MPH Program (MPA/MBA Dual Degree), 2012-2014
- Etka Argawal; Academic Advisor for MPH Program in Epidemiologic and Biostatistical Methods for Public Health and Clinical Research, 2013-2014
- Lee Meller, MD; Academic Advisor for Part-time iMPH Program, 2013-2014
- Sharonjit Sagoo, PharmD; Academic Advisor for Part-time iMPH Program, 2015-
- Carolyn Tieu, PharmD, Academic Advisor for MPH Program, 2016-2017
- Ken Ogasawara, PhD, Academic Advisor for MPH Program, 2016-2017
- Denise Lepley, Academic Advisor for Part-time iMPH Program, 2017-2018
- Juan Franco, MD, Academic Advisor for Part-time iMPH Program, 2018-2020
- Varsha Lalchandani, Academic Advisor for Part-time iMPH Program, 2018-
- Rachel McFadden, Academic Advisor, Bloomberg American Health Fellow, 2019-
- Michael Kennedy, Academic Advisor, Bloomberg American Health Fellow, 2020-
- Sindhura Karlapudi, MBBS, Academic Advisor for MPH Program, 2020-2021

*Graduate students (MHS Advisor)*

- Francine Chingcuanco; Academic Advisor for MHS Program in Cardiovascular Epidemiology, 2014-2016
- Geetha Ayer; Academic Advisor for ScD Program in Cardiovascular Epidemiology, 2014-2016
- Meijia Zhou; Academic Advisor for MHS Program in General Epidemiology and Methodology, 2012-2014
- Jeffrey Yu; Academic Advisor for MHS Program in Health Economics, 2017-2018
- Hanzhe Zhang; Academic Advisor for MHS Program in General Epidemiology and Methodology, 2017-2020

*Graduate students (Capstone or Thesis Advisor)*

- Ayu Katada; Academic Advisor for MPH Program (MPA/MBA Dual Degree), 2012-2014
- Jinhee Moon, MHS; Capstone Advisor for MPH Program, 2012-2013 (Outstanding Achievement Award)
- Steven Jones; Capstone Advisor for MPH Program, 2012-2013
- David Nartey; Capstone Advisor for MPH Program, 2012-2013
- Tatyana Lyapustina; Capstone Advisor for MPH Program (MD/MPH Dual Degree), 2014-2015
- James Goldberg; Capstone Advisor for iMPH Program, 2015-2016
- Zoya Fansler; Capstone Advisor for Part-time iMPH Program, 2015-2016
- Jeong Ah Cho; Capstone Advisor for MPH Program (MPH/MBA Dual Degree), 2016-2018

- Shengyuan (David) Luo; Thesis Co-Advisor for MHS Program, 2016-2018
- Yunwen Xu; Thesis Advisor for MHS Program, 2016-2018
- Omar Mansour; Thesis Advisor for MHS Program, 2016-2018
- Jeffrey Rollman; Capstone Advisor for MPH Program, 2017-2018
- Nune Makarova; Capstone Advisor for MPH Program, 2017-2018
- Nisha Parikh; Capstone Advisor for MPH Program, 2018-2019
- Xintong Li; Thesis Advisor for MHS Program, 2017-2019
- Juan Franco, MD, Capstone Advisor for Part-time iMPH Program, 2018-2019
- Paul O'Malley, Capstone Advisor for Part-time iMPH Program, 2019
- Stephen Sander, Capstone Advisor for Part-time iMPH Program, 2020
- Margarita Sotelo, Capstone Advisor for Part-time iMPH Program, 2021
- Paul O'Malley, Capstone co-Advisor for Part-time iMPH Program, 2021
- Jesuseun Owoniyi, Capstone Advisor for Part-time iMPH Program, 2021
- Cameron Carlock, Capstone Advisor for Part-time iMPH Program, 2021

*Graduate Students (Doctoral Advisor or Dissertation Committee Member)*

- Kevin Fain, Dissertation Committee Member (DrPH/Epidemiology), 2012-2015
- Jingwen Tan, Dissertation Committee Member (PhD/Clinical Epidemiology), 2012-2016
- Shilpa Viswanathan, Dissertation Committee Member (PhD/Clinical Epidemiology), 2012-2015
- Richard Scott Swain, Dissertation Committee Member (PhD/Clinical Epidemiology), 2013-2015
- Christopher Kaufman, Dissertation Committee Member (PhD/Mental Health), 2013-2015
- Christine Buttorff, Dissertation Committee Member (PhD/Health Policy and Management), 2012-2014
- Remington Nevin, Dissertation Committee Member (PhD/Mental Health), 2014-2017
- Mariana Socal, Dissertation Committee Member (PhD/Mental Health), 2014-2017
- Lisa Selker, Dissertation Committee Member (PhD/University of North Carolina Rollings School of Public Health), 2015-2020
- Sheriza Bakst, Doctoral Advisor (PhD/Epidemiology), 2015-2018
- Alex Secora, Doctoral Advisor (PhD/Epidemiology), 2016-2019
- Lucy Qiao, Doctoral Co-Advisor (PhD/Epidemiology), 2017-2021
- Kathleen Anderson, Doctoral Co-Advisor (PhD/Epidemiology), 2018-
- Jiajun Wen, Dissertation Committee Member (PhD/Epidemiology), 2018-
- Thomas Metkus, Dissertation Committee Member (PhD/Graduate Training Program in Clinical Investigation [GTPCI]), 2019-
- Lin Wang, Doctoral Co-Advisor (PhD/Epidemiology), 2019-2021
- Katherine Ozenberger, Dissertation Committee Member (PhD/University of Illinois School of Pharmacy), 2019-
- Bingkai Wang, Dissertation Committee Member (PhD/Biostatistics), 2020-2021
- Lisa Dwyer, Part-time/online DrPH Program, Academic Advisor, 2020-
- Jennifer Black, Part-time/online DrPH Program, Academic Advisor, 2020-
- Brendan Rabideau, Dissertation Committee Member (PhD/Health Policy & Management), 2019-
- Ahizechukwu C Eke, Dissertation Committee Member (PhD/GTPCI), 2019-2021

*Other Trainees (Post-doctoral or Junior Faculty)*

- Kevin Riggs, MD; Mentor for research program examining generic utilization and effect of drug coupons on drug utilization and expenditures, 2013-2016
- Mark Bicket, MD; Mentor of career development award activities focused on utilization, safety and effectiveness of prescription opioids in peri-operative setting, 2016-2018
- Lori Dean, PhD; Mentor for CFAR Faculty Development Award, 2021-2022



### *Classroom Instruction*

- Designer and Instructor, Pharmacoepidemiology: Drug Utilization, 2014-present (340.684.01)
- Co-Instructor, Design of Epidemiologic Studies: Proposal Development & Critique, 2015-present (340.715.01)
- Lecturer, Epidemiology of Aging (340.616.01)
- Lecturer, Pharmacoepidemiology Methods (340.682.01)
- Small Group Facilitator: Clinical Epidemiology, Johns Hopkins School of Medicine, 2014-2016
- Graduate Summer Institute of Epidemiology and Biostatistics: Pharmacoepidemiology (340.617.11)
  - Lecturer, 2012-2016
  - Designer and Co-Instructor, 2017-present
  - Excellence in Teaching Distinction for Course
- Lecturer, Graduate Training Program in Clinical Investigation, Principles of Drug Development, 2017-present

### *Other significant teaching*

- Participate in informal mentoring with dozens of students through works in progress, journal clubs and seminar series within the Departments of Epidemiology (School of Public Health) and the Division of General Internal Medicine (Johns Hopkins Medicine)
- Co-lead Special Seminar Series “Pharmaceutical Safety, Value and Innovation” sponsored by Center for Drug Safety and Effectiveness

## **TEACHING (University of Chicago, 2001-2012)**

### *Undergraduate students*

Mounica Yanamandala, University of Chicago, Primary mentor (2009-2011)  
Regina Depietro, University of Chicago, Primary mentor (2009-2011)  
Mateusz Ciejka, University of Chicago, Primary mentor (2009-2010)  
Sarah Gallagher, University of Chicago, Primary mentor (2008-2009)  
Maliha Darugar, University of Chicago, Primary mentor (2003-2006)  
Nadiyah Mohajir, Harris School for Public Policy, Honors thesis advisor (2002-2003)  
Diane McFadden, University of Chicago, Primary mentor (2002-2003)

### *Graduate students*

Frank Liu, Department of Pharmacy Administration, College of Pharmacy, University of Illinois at Chicago, Thesis committee (2008-2010)  
Teri Arthur, PhD, MSW, Social Services Administration, Dissertation Committee (2004-2008)  
Carolanne Dai, PhD, Harris School of Public Policy, Dissertation Committee (2002-2007)  
Sachiko Kuwabara, BA, Masters of Arts, University of Chicago (2004-2006)  
Melissa Brown, BA, Masters of Arts, University of Chicago (2005-2006)

### *Medical students*

Erica MacKenzie, BA, Research Mentor (2011)  
Daniel Kozman, BA, Research Mentor (2010)  
Jessica Pirella, BA, Research Mentor (2010)  
Andrew Cohen, BA, Research Mentor (2009)  
Michelle Stacey, BA, Research Mentor (2009)  
Karen Draper, BA, Research Mentor (2008)  
Allison Lale, BA, Research Mentor (2008)

Rob Guzy, MD, PhD, Residency Advisor (2007)  
Susanne Phongsak, BA, Research Mentor (2006)  
Cesar Guerrero, BA, Research Mentor (2006)  
Patrick Lang, BA, Research Mentor (2004)  
Charles Kaufmann, MD, PhD, Residency Advisor (2004-2005)  
Stephanie Takahashi, MD, Residency Advisor (2005-2006)

#### *Residents*

Victoria Wong, MD, Editorial fellow, Journal of General Internal Medicine (2009-)  
Femi Aboyeji, MD, Research elective mentor (2007)

#### *Fellows*

Jonas DeSouza, MD (2010-2012)  
David Brush, MD (2009-2012)  
Milda Saunders, MD, MPH (2008-2012)  
Health services research fellows. University of Chicago (2004-2012)  
MacLean Center for Clinical Medical Ethics, Lecturer (2003-2012)  
Rachel Caskey, MD, Primary mentor (2006-2008)  
Alexia Torke, MD, HRSA Fellow, Primary mentor (2005-2007)  
Tumaini Colker, MD, MBA, Robert Wood Johnson Clinical Scholar (2005-2006)  
Gretchen Schwarze, MD, MPH, Vascular Surgery (2003-2006)

#### *Post-doctoral fellows*

Dima Qato, PharmD, MPH, PhD (2011)  
Atonu Rabbani, PhD (2007-2009)

#### *Classroom Instruction*

Lecturer, The doctor-patient relationship in clinical practice (2002-2011)  
Lecturer, MacLean Center for Clinical Ethics Summer Intensive (2003-2011)  
Designer and lecturer, Research Design Course for RWJF Clinical Scholars (2004-2006)  
Designer and lecturer, Research Design Course for Fellow Summer Intensive (2004-2006)  
Lecturer, Introductory Course on the fundamentals of health services research

#### *Other significant teaching*

Group leader for medical student summer research program (2004-2011)  
National Youth and Leadership Forum, Faculty participant (2005-2010)  
Participant in 1:1 Mentoring Program, Society of General Internal Medicine, 2007

## **RESEARCH GRANT AND CONTRACT PARTICIPATION**

#### *Current support*

Grant: 1 T32 HL139426-01; 12/27/2017 – 12/26/2022; National Heart, Lung and Blood Institute (Alexander/Segal)

Purpose: To optimize the safe and effective use of medicines to treat heart, lung and blood diseases

Grant: R01DK115534-01A1; 8/01/18 07/31/22; National Institutes of Diabetes and Digestive and Kidney Diseases (Grams/Inker)

Purpose: To investigate the risk and benefits of specific medications across the range of kidney function within 5 large, global electronic health records

Grant: 1R01DA044987-01; 9/30/2017 – 7/31/2021; National Institutes of Drug Abuse (McGinty/Rutkow)

Purpose: To quantify the effect of state laws intended to curb high-risk opioid prescribing

Grant: 1 U01 FD005942-01; 9/1/2018-8/31/2022; Food and Drug Administration (Alexander)

Purpose: To enhance regulatory science through a unique FDA-academic partnership (CERSI)

Grant: 05/01/2019-02/28/2022; The Arnold Foundation (Andersen)

Purpose: To develop and enact legislation to lower drug prices and enhance access to pharmaceuticals

*Past support (selected list)*

Grant: 1R01DA042738-01; 02/01/17–11/30/20; National Institutes of Drug Abuse (Rutkow)

Purpose: To assess the association between clean indoor air laws, cigarette taxes, and use of smoking cessation treatments

Grant: 5 R21AG058132-02; 9/15/18 – 8/31/20; National Institute on Aging (Andersen)

Purpose: To quantify the effect of drug utilization management in the Medicare Part D program

Grant: 3/1/2019 – 2/29/2020; Cardinal Health (Qato)

Purpose: To conduct a pilot study exploring the potential role of telepharmacy in improving medication adherence in urban areas

Grant: 3R01DA044987-03S1; 8/1/2019 – 10/31/2019; National Institutes of Drug Abuse (McGinty/Rutkow)

Purpose: Landscape Review of U.S. Health Professional Pain Management Curricula

Grant: 8/1/17-4/30/19; The Arnold Foundation (Andersen)

Purpose: To evaluate and advance policies to achieve a “fair price” of high cost prescription drugs

Grant: 5/5/2017- 1/30/2018; Department of Health and Human Services/ASPE (Alexander)

Purpose: To describe the breadth and depth of coverage policies for acute and chronic back pain among a nationally representative selection of Medicaid, Medicare Advantage and commercial health plans

Grant: 7/1/2016-4/4/2017; AstraZeneca (Alexander)

Purpose: To quantify the disease burden and resource utilization associated with Systemic Lupus Erythematosus (SLE)

Grant: 12/2/2016-6/30/2017; AstraZeneca (Alexander)

Purpose: To characterize the association between organ damage, quality of life, and mortality among patients with Systemic Lupus Erythematosus (SLE)

Grant: ID# 72452; 2/15/2015-1/31/2017; Robert Wood Johnson Foundation (Rutkow)

Purpose: To understand role of interorganizational relationships, information sharing and legally established infrastructure on prescription drug monitoring programs’ function and impact within the public health system

Grant # U01FD005556: 09/15/15-08/31/16; Food and Drug Administration (Varadhan)

Purpose: To develop structural nested models to assess safety and effectiveness of generic drugs

Grant: 1 R01 HL 107345-01; 4/1/11-3/31/15; NHLBI (Alexander, Co-PI)

Purpose: To examine the effect of DTCA on prescription and non-prescription health care utilization

Grant: 1 R01 AG034187-01; 7/1/2012-6/30/2015; National Institutes on Aging (Kaestner)  
Purpose: To determine if Part D Prescription Coverage Improves Health and Reduces Inpatient Use

Grant: 1 UO1 CE002499-01; 9/1/2014-9/1/2016; Center for Disease Control and Prevention (Alexander)  
Purpose: To evaluate the effect of Florida's Pill-Mill Law on opioid prescribing, utilization and dispensing

Grant: ID# 24741; 7/1/2014-1/1/2016; Robert Wood Johnson Foundation (Alexander)  
Purpose: To evaluate the effect of Prescription Drug Monitoring Programs on opioid prescribing, utilization and dispensing

Grant: 1 R01 HS 018960-01; 8/1/10-7/31/14; Agency for Health Care Quality and Research (Alexander)  
Purpose: To assess the effect of FDA advisories on provider, patient, and firm behavior

Grant: 1 K08 HS15699-01A1; 2/01/06-2/01/11; Agency for Health Care Quality and Research (Alexander)  
Purpose: To conduct a randomized trial to reduce patient's out-of-pocket prescription costs

Grant: Robert Wood Johnson Physician Faculty Scholars Award; 7/1/06-6/30/09; RWJ Foundation (Alexander)  
Title: Development and evaluation of interventions to reduce patients' prescription costs

Contract: IMS Health Services Research Network; 10/1/10-12/31/11; IMS Health (Alexander)  
Purpose: To develop and promote academic research network using IMS Health's data assets to address questions relevant to health care reform

Grant: UL1RR024999; 12/1/09-11/30/10; CTSA Institutional Pilot (Alexander)  
Purpose: To quantify the impact of FDA advisories on psychotropic medication use among children

Grant: The University of Chicago Program for Pharmaceutical Policy; 2/01/05-6/1/09; The Merck Foundation (Meltzer)  
Purpose: To foster innovative research at the University of Chicago in pharmaceutical policy with a focus on regulation, innovation, and technology assessment

Contract: HHS 290 200 500 381; 9/16/05-9/15/10; Agency for Health Care Quality and Research (Schumock)  
Title: Chicago Area Pharmaceutical Outcomes Research Consortium. Developing Evidence to Inform Decisions about Effectiveness: The DEcIDE Network

Grant: The Greenwall Foundation; 7/1/10-6/30/11 (Alexander)  
Purpose: To conduct a mixed-methods study to examine management of conflict between physicians and surrogate of critically ill adults

Grant: Center for Education and Research on Therapeutics (CERT); 09/01/07 – 3/31/11; Agency for Health Care Quality and Research (Meltzer)  
Purpose: To create an education and research infrastructure that produces and disseminates knowledge to improve the effectiveness and cost-effectiveness of the use of therapeutics

Grant: Mixed-methods exploration of the adoption of the HPV Vaccine; 10/1/07-9/30/08; University of Chicago Program for Pharmaceutical Policy Pilot Grant (Alexander)  
Purpose: To establish prevalence and determinants of HPV vaccine uptake

Contract: HHS29020050038I; 9/15/06-1/29/07; AHRQ (Walton)

Purpose: To develop a method of prioritization of research efforts on off-label drug use

Grant: R39OT03411-01-00; 10/01/04-09/30/07; Health Resources and Services Administration Division of Transplantation (Lang)

Purpose: To develop, implement, and assess workplace intervention to increase organ donor intention

Grant: The Medicaid Pharmacy Cost Containment and Patient Outcomes; 7/1/06-6/30/07; Center for Health and the Social Sciences - University of Chicago Pilot Grant (Alexander)

Purpose: To examine association between Medicaid cost-containment policies and clinical outcomes

Grant: Donald W. Reynolds Foundation; 9/1/03-8/31/07; National Institute of Aging (Sachs)

Purpose: Faculty Development in Geriatrics

Grant: Robert Wood Johnson Foundation Clinical Scholars Program; 7/1/03-7/1/06; Robert Wood Johnson Foundation (Lantos)

Purpose: To provide a post-residency academic program that trains scholars to apply pure research methods to health-related problems.

Grant: 1 H39 OT 00086-01; 10/01/01-09/30/04; Health Resources and Services Administration Division of Transplantation (Lang)

Purpose: To develop, implement, and assess a corporate workplace intervention designed to increase intention to become an organ donor

Grant: 5 K12 AG00488; 09/01/96-08/31/04; National Institute of Aging (Sachs)

Purpose: Geriatric Academic Program Award

## ACADEMIC SERVICE

2020-2023	Faculty Executive Committee (Member), Department of Epidemiology, JHSPH
2018-2021	Honors and Awards Committee (Chair), Department of Epidemiology, JHSPH
2016	Faculty Search Committee (John Jackson), Department of Epidemiology, JHSPH
2015	Faculty Search Committee (Mara McAdams), Department of Epidemiology, JHSPH
2015	Faculty Search Committee, Johns Hopkins Berman Institute of Bioethics
2014-2015	Graduate Training Program in Clinical Investigation (GTPCI) Review Committee
2014-2017	Admissions and Credentials Committee, Department of Epidemiology, JHSPH
2014-	Technology Transfer Committee, JHSPH
2013-2017	Curriculum Committee, Department of Epidemiology, JHSPH
2010-2012	Diabetes Research and Training Center, University of Chicago
2006-2010	Biological Sciences Division Institutional Review Board Member
2006	Steering Committee, Conference on Pharmaceutical Policy, Chicago, Illinois
2006-2008	Steering Committee, DOM Research Day, University of Chicago
2006-2008	Steering Committee, UOC Program in Pharmaceutical Policy, University of Chicago
2005-2006	Search Committee, UOC Comprehensive Cancer Center, Population Science Director
2003-2012	MacLean Center Ethics Committee, University of Chicago
2003-2008	Medicine and the Social Sciences, Co-Chair, University of Chicago
2000-2001	General Medicine Interest Group, Co-Chair, UPHS
2000-2001	Residency Review Committee, Class Officer, UPHS

1999-2001	Hospital of the University of Pennsylvania Ethics Committee, UPHS
1996-1997	Rainbow Babies and Children's Hospital Ethics Committee, CWRU
1994-1996	Class Officer and Chair, Committee of Student Representatives, CWRU

## INVITED SEMINARS OR ROUND TABLES

### *Local or Regional*

1. Racial differences in access and outcomes of kidney transplantation. Workshop on medicine and the social sciences. University of Chicago. November 2002.
2. Public support for physician deception of insurance companies. Council on ethical and judicial affairs, American Medical Association. Chicago, IL. April 2003.
3. Truth and lies: are the rules different for lawyers? Panel discussion at the American Bar Association Conference on Professional Responsibility. May 2003.
4. Patient-physician communication about out-of-pocket costs. Northwestern University, December 2002.
5. Patient-physician communication about out-of-pocket costs. Program in Medicine, Arts, and the Social Sciences. University of Chicago. Feb 2004.
6. Patient-physician communication about out-of-pocket costs. Program in Medicine, Arts, and the Social Sciences. University of Chicago. February 2004.
7. Is prescription choice rational? By whose standards? Pharmaceutical innovation and regulation: an American dilemma. Faculty workshop, University of Chicago. February 2004.
8. The doctor-patient relationship in the post-managed care era. American Medical Association. Chicago, IL. May 2004.
9. National trends in Cox-2 inhibitor use since market release: the non-selective diffusion of a selectively cost-effective innovation. Center for Pharmacoeconomics Research, University of Illinois School of Pharmacy. July 2004.
10. Division of Geriatrics Grand Rounds, University of Chicago Hospitals. A framework for medication prioritization and discontinuation. December 2004.
11. Department of Medicine Grand Rounds, University of Chicago Hospitals. Pharmaceutical innovation and the doctor-patient relationship: understanding the diffusion of Cox-2 inhibitors from 30,000 feet to the ground level. February 2005.
12. Bioethics Interest Group, Stritch School of Medicine, Loyola University. Physician deception of insurance companies. April 2005.
13. Midwest Center for Health Services and Policy Research. Hines Veterans Affairs System, Hines, IL. The diffusion of pharmaceutical innovation in the Veterans Affairs Health System. November 2005.
14. American Medical Student Association Panel Discussion. Pritzker School of Medicine, University of Chicago. Discussed role of industry in physician education and prescribing. November 2005.

15. Bioethics Interest Group. Pritzker School of Medicine, University of Chicago. Empiric ethics . . . or . . . what do numbers have to do with right and wrong? February 2006.
16. Chicago Medical Society. Panel discussion on medical ethics. Holiday Inn – Chicago Mart Plaza. Chicago, IL. March 2006.
17. Ethics dinner discussion with students from Pritzker Medical School, University of Chicago, May 2006.
18. The road less traveled – career paths in general internal medicine. National Youth Leadership Forum on Medicine, Chicago, IL. June 2006.
19. The Union League. Ethics considerations in pandemic planning. Chicago, IL. October 2006.
20. Attention: You have just entered the cost-sharing era: ethical, policy, and clinical considerations. Department of Medicine Research Series, December 2006.
21. Pharmacothic and pharmacothat: exploring topics in pharmaceutical research. University of Chicago Division of General Medicine Outcomes Group. March 2007.
22. Thinking globally, acting locally: a Chicagoland collaboration to unravel the impact of the Medicare Prescription Drug Benefit. TAP Pharmaceuticals. Chicago Midwest ISPOR Meeting. April 2007.
23. What do general internists do, and why? National Youth Leadership Forum on Medicine, Chicago, IL. June 2007.
24. The best of times, the worst of times: clinical decision-making and prescription choice in the 21<sup>st</sup> Century. Department of Otolaryngology. University of Chicago. October 2007.
25. What do we know about health care provider interaction with the pharmaceutical industry? University of Illinois Medical Center at Chicago Clinical Ethics Conference. March 2008.
26. Asking the right question(s) and getting funded to do so. University of Illinois at Chicago Advanced methods and grant writing workshop. March 2008.
27. Challenges and opportunities examining the off-label use of prescription medicines. Institute for Healthcare Studies. Northwestern University, Chicago, IL, May 2008.
28. Improving pharmacotherapy during outpatient care. Primary care medicine today (PRIMED) conference. Rosemont, IL, February 2009.
29. Choosing a research question: the perennial dilemma of “what shall I study”? Midwest Hospitalist Meeting. Chicago, IL. October 2009.
30. Conflicts of interest in medicine. Pritzker School of Medicine, University of Chicago. May 2010.
31. Using social network methods to study prescription drug uptake and diffusion. Department of Health Studies. University of Chicago. November 2010.
32. Managing risk through ethical practice. ISMIE Mutual Insurance Company. Chicago, IL 2010.

33. Overview of Clinical Epidemiology, in Fundamentals of Epidemiology. Johns Hopkins Krieger School of Arts and Sciences. November 2012.
34. The Prescription Opioid Epidemic: In Search of Mission Control.
  - Johns Hopkins Welch Center for Prevention, Epidemiology and Clinical Research Grand Rounds. December 2012.
  - University of Maryland Department of Pharmaceutical Health Services Research. April 2013.
  - Johns Hopkins Department of Medicine Osler Grand Rounds, October 2013.
  - Anne Arundel Medical Center Department of Medicine Grand Rounds, January 2014.
35. Drugs and Aging, in Epidemiology of Aging. Johns Hopkins Bloomberg School of Public Health. May 2013.
36. Career Development, in Public Health Economics Seminar. Johns Hopkins Bloomberg School of Public Health. September 2013.
37. The Effect of FDA Risk Communications on Patient, Provider and Firm Behavior. Johns Hopkins Department of Psychiatry Research Conference, December 2013.
38. Managing Prescription Opioids In Workers Compensation Programs. American Insurance Association. Washington, DC. June 2014.
39. Secondary Data Analysis. General Internal Medicine Fellows Conference. Johns Hopkins Medicine. Baltimore, MD. September 2014.
40. Center for Medical Technology Policy (CMTTP) Green Park Collaborative Annual Meeting. “Real World Evidence – Defining What “Good” Looks Like”. Panel Discussion. April 2015.
41. Safety, Efficacy and Pharmacokinetic Bioequivalence of Biosimilar TNF- $\alpha$  Inhibitors Compared with their Reference Biologics: A Systematic Review. Department of Clinical Pharmacology, Johns Hopkins Hospital. February 2016.
42. Reducing Prescription Drug Spending: A Review of Policy Options. Johns Hopkins Bloomberg School of Public Health. March 2016.
43. Keynote. Managing the Unmanageable: Reining in the Opioid Epidemic. CareFirst. Baltimore, Maryland, June 2017.
44. Moderator. Epidemiology Inclusion, Diversity, Equity & Science (Epi IDEAS) Communication with Policy Makers: The Opioid Epidemic. Panel Discussion featuring Lauren Jee and Amanda Latimore. Johns Hopkins Bloomberg School of Public Health. Baltimore, Maryland, January 2019.
45. Round Table Participant. National Center for Health Statistics. Data Dissemination of New Data: Alignment of Infrastructure Improvements on Opioid Use and Overdose with Researchers’ Needs and Interests. Rockville, Maryland, July 2019.
46. Johns Hopkins Department of Pathology Symposium. The Opioid Epidemic. Baltimore, Maryland, September 2019.



47. Johns Hopkins Department of Epidemiology. Pivotal Trials for FDA-Approved Novel Therapeutic Agents: How Good is the Science, and What Does It Cost? Baltimore, Maryland, September 2019.

*National or International*

48. Panel discussion of interdisciplinary health professions education. Ohio League of Nursing Annual Meeting, Cleveland, Ohio, October 1996.

49. Grand Rounds, Department of Medicine, University of Pennsylvania: Pharmaceutical industry sponsorship of continuing medical education: training physicians or marketing products? June 2001.

50. Patient-physician communication about out-of-pocket costs. University of Michigan, January 2003.

51. Patient-physician communication about out-of-pocket costs. MetroHealth Medical Center, January 2003.

52. “Luxury care”, professional standards, and personal choice: ethical and professional issues in retainer medical practices. Panel discussion at the American Society of Bioethics and Humanities Annual Meeting. October 2004.

53. Ad hoc pharmacoeconomics working group. AstraZeneca LP. Patient-physician communication about out-of-pocket costs. June 2005.

54. How much should \$38 billion buy? The uptake and impact of the Medicare Part D Prescription Benefit. Department of Medicine. VA Center for Health Equity Promotion and Research and University of Pittsburgh Department of Medicine. December 2007.

55. The Medicare Modernization Act Prescription Drug Benefit. Department of Ambulatory Care and Prevention, Harvard Medical School. January 2008.

56. Principles of survey research. Patan Academy of Health Sciences. Kathmandu, Nepal, April 2008.

57. Health care publishing in the peer-reviewed literature. Patan Academy of Health Sciences. Kathmandu, Nepal, April 2008.

58. Impact of FDA regulatory advisories on patient, provider and firm behavior. Mayo Clinic, April 2010; Virginia Commonwealth University, October 2010; Yale University, November 2010; Johns Hopkins University School of Medicine, November 2010; Johns Hopkins University School of Public Health, June 2011.

59. Special Guest: FED UP: Rally for a Federal Response to the Opioid Epidemic, National Sylvan Theater Stage at the Washington Monument, Washington DC, September 2014.

60. Panelist: Art and Science of Scientific Communications. CBI Advanstar. Publication Planning Forum. Philadelphia, PA. December 2014.

61. CMS Grand Rounds: The Opioid Epidemic. CMS Headquarters, Baltimore, MD. November 2015.

62. Panelist: Drug Safety and Surveillance. FDA/CMS Summit. IIR/IBC Life Sciences. Ritz Carlton Hotel, Washington DC, December 2015.
63. Special Guest: The Opioid Epidemic. American Insurance Association: Workers' Compensation Committee. Washington DC, February 2015.
64. Safety, Efficacy and Pharmacokinetic Bioequivalence of Biosimilar Tumor Necrosis Factor-alpha Inhibitors Compared with their Reference Biologics: A Systematic Review. Harvard Pilgrim Health Care. March 2016.
65. The Opioid Epidemic. Johns Hopkins Department of Pharmacy Grand Rounds. May 2016.
66. Guest Speaker: Innovations in Diabetes Care. Academy of Managed Care Pharmacy. Alexandria, Virginia, July 2016.
67. Panelist: Needed Changes in Federal Policy and Legislation to Address Nation's Opioid Crisis. Educational Briefing for Congressional Members and Staff. Washington, DC, September 2016.
68. Panelist: Balancing Opioid Access and Use. Academy of Managed Care Pharmacy Annual Research Symposium. Alexandria, Virginia, October 2016.
69. Keynote. An Evidence-Based Approach to the Opioid Epidemic. National Academy for State Health Policy. Pittsburgh, Pennsylvania, October 2016.
70. Special Guest Speaker. Science, Public Health and the Prescription Opioid Industry. Motley Rice LLC. Washington, DC, June 2017.
71. Guest Speaker. Opioid Prescribing Practices. Bloomberg Philanthropies. January 2018.
72. Plenary Speaker. Conundrums in Biotechnology: How Does Quality Impact Safety. World Congress of Biopharmaceuticals. Washington, DC, February 2018.
73. Special Invited Speaker. "Covering the Opioid Crisis". National Press Foundation. Washington, DC, February 2018.
74. Guest Panelist. "Addressing Prescription Drug Costs". Johns Hopkins Carey School of Business Drug Accessibility and Pricing Symposium. Baltimore, MD, March 2018.
75. Guest Panelist. "Best Practices in Opioid Prescription, Pain Management, Medicine-Assisted Treatment and Recovery: New Models of Care for Opioid Use Disorder". Modern Healthcare Opioid Symposium. Baltimore, MD, April 2018.
76. Invited Speaker. "Comparative Safety of NSAIDs and Opioids Among Hospitalized Patients: A Case Study". Premier Annual Breakthroughs Conference. Nashville, TN, June 2018.
77. Guest Speaker. National Governor's Association. Opioid Coverage Policy Roundtable. Washington, DC, June 2018.
78. Invited Panelist. National Black Caucus Foundation. Protecting the Health, Safety and Security of African American Communities. Health and Wellness Luncheon. Washington, DC, September 2018.

79. Session Moderator. State Legislative Leaders Foundation (SLLF) Fall Issues Summit. Addressing the Opioid Crisis. Baltimore, MD, September 2018.
80. Panelist. “Addiction Research – What is New and What is Interesting?” and “Why Recovery Research Matters and Why Residents and Alumni Should Participate”. Oxford House World Convention. Kansas City, MO, October 2018.
81. Facilitator. Academy of Managed Care Pharmacy Partnership Forum: “Building the Foundation for Patient-Reported Outcomes: Infrastructure and Methodologies”. Orlando, FL, November 2018.
82. Invited Panelist. National Academies of Science, Engineering and Medicine. “The Role of Nonpharmacological Approaches to Pain Management.” Washington, DC, December 2018.
83. Medicine Grand Rounds. Weill Cornell Medicine. “The Opioid Epidemic: Grief and Hope in the New Year”. New York, NY, January 2019.
84. Invited Panelist. OpioidX: New Approaches to Addressing the Opioid Crisis. MIT Sloan School of Management. Laboratory for Financial Engineering. Boston, MA, November 2020.
85. Invited Panelist. Electronic Prescribing of Controlled Substances (EPCS). American Medical Informatics Association. November 2020.
86. Invited Instructor. Academy of Managed Care Pharmacy (AMCP) Annual Meeting. Evidence behind COVID-19 Treatments and Vaccines. March 2021.
87. Co-developer. Bridging Faith and Science to Combat the Overdose Crisis. Partnership with Clinton Foundation, Johns Hopkins Bloomberg School of Public Health, and Centre for Responsible Leadership. Live Virtual Event featuring President Bill Clinton, Dr. Sanjay Gupta, Ellen J. MacKenzi, Bishop Vashti McKenzie, Dr. David Satcher and His Excellency Mohammad bin Abdulkarim Al-Issa. May 2021.
88. Invited Discussant. National Center for Health Research Panel on the COVID-19 Pandemic. “What Keeps Me Awake At Night and Other Things I Would Like To Know”. National Center for Health Research. May 2021.
89. Guest Speaker. “It Was the Best of Times, It Was the Worst of Times: The Curious Case of Aducanumab for the Treatment of Alzheimer’s Disease”. Johns Hopkins Bloomberg School of Public Health. June 2021.
90. Panelist. FDA approves \$56,000 treatment for Alzheimer’s with Questionable Efficacy – What Happens Next? Johns Hopkins Business of Health Initiative. Johns Hopkins University. July 2021.
91. Invited Lecturer. The Aging and Memory Clinic Speakers Series at Saint Louis University. Aducanumab: Breaking Down the New Drug for Alzheimer’s Disease. September 2021.

## **NARRATIVE**

G. Caleb Alexander, MD, MS is a Professor of Epidemiology and Medicine at Johns Hopkins Bloomberg School of Public Health, where he serves as a founding co-Director of the Center for Drug Safety and Effectiveness and Principal Investigator of the Johns Hopkins Center of Excellence in Regulatory Science and Innovation (CERSI). He is a practicing general internist and pharmacoepidemiologist and is internationally recognized for his research examining prescription drug utilization, safety and effectiveness. Dr. Alexander is the author of over 350 scientific articles and book chapters, many using primary or secondary data to characterize the epidemiology of prescription opioid use in the United States as well as to evaluate the effect of federal and state regulatory and payment policies on opioid prescribing, dispensing and utilization. He has extensive experience disseminating these findings to both professional and lay audiences and has testified in front of both the U.S. House of Representatives and the U.S. Senate regarding his team's work. He is also one of three editors of a widely cited monograph produced by the Johns Hopkins Bloomberg School of Public Health that has provided comprehensive and concrete, evidence-based recommendations for addressing the opioid epidemic. Dr. Alexander received his B.A. cum laude from the University of Pennsylvania, an MD from Case Western Reserve University, and a Master of Science from the University of Chicago.

## **KEYWORDS**

Pharmacoepidemiology, pharmaceutical policy, regulation, internal medicine, opioids, opioid use disorder

## Curriculum Vitae

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**Work Email:** [mbarnett@hsph.harvard.edu](mailto:mbarnett@hsph.harvard.edu)

### **Education**

2005	B.S., <i>Magna Cum Laude</i>	Molecular Biophysics and Biochemistry	Yale University, New Haven, CT
2006	M.M.	Oboe Performance	Yale School of Music, New Haven, CT
2011	M.D., <i>Magna Cum Laude</i>	Medicine	Harvard Medical School (HMS), Boston, MA
2016	M.S.	Health Policy and Management	Harvard T. H. Chan School of Public Health (HSPH), Boston, MA

### **Postdoctoral Training**

6/2011-7/2012	Intern	Internal Medicine and Primary Care	Brigham and Women's Hospital (BWH), Boston, MA
7/2012-7/2014	Resident	Internal Medicine and Primary Care, Management Leadership Track	BWH
7/2014-6/2016	Research Fellow	Internal Medicine	BWH/HMS

### **Faculty Academic Appointments**

7/2016-	Assistant Professor	Health Policy and Management	HSPH
7/2016-1/2019	Instructor	Medicine	HMS
2/2019-	Assistant Professor		

### **Appointments at Hospitals/Affiliated Institutions**

7/2014-	Associate Physician	General Medicine	BWH
7/2014-	Associate Physician	General Medicine	Brigham and Women's Faulkner Hospital (BWFH), Boston, MA

## **Other Professional Positions**

2010-2017	Medical Advisor	Ginger.io, San Francisco, CA
2012-2013	<i>Ad Hoc</i> Consultant	Kyruus Inc., Boston, MA
2016-	Associate Faculty Member	Ariadne Labs, Boston, MA

## **Committee Service**

### **Local**

2009-2010	Patient-Doctor III Steering Committee, Member	HMS
2010-2011	Subcommittee of Scholars in Medicine Curriculum, Member	HMS
2010-2011	Crimson Care Collaborative Research/Outcomes Committee, Chair	HMS
2012-2013	Timed Lab Improvement Committee, Member	BWH
2013-2014	Internal Medicine Residency Information Technology committee, Member	BWH
2013-2014	Pharmacy and Therapeutics Committee, Member	BWH
2013-2014	Clinical Improvement Committee, Member	BWH
2017-	BWH Internal Medicine (IM) Residency Interview Committee	BWH
2017-	Health Policy and Management MPH Admissions Committee	HSPH

### **Regional**

2017-	Member, Coalition for the Prevention of Medical Errors	Massachusetts Coalition for the Prevention of Medical Errors
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### **National**

2018	Member, Medication Management and Opioids Change Package Review Group	Center for Medicare and Medicaid Services
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### **International**

2020	Expert Member, Application of Natural Language Processing to eConsult Nominal Group Technique Panel	Ottawa Hospital Research Institute
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## **Professional Societies**

2010-	Society of General Internal Medicine (SGIM)	Reviewer, Abstract Selection Committee
2015-	AcademyHealth	
2010-		

2018-		Theme Reviewer, Payment and Delivery Systems Innovation
2013-	American Medical Association (AMA)	

### **Grant Review Activities**

2017-	Responsive Research Grant Program	Retirement Research Foundation
2017-		<i>Ad Hoc</i> Reviewer
2018	Individual Research Grant Program	Israel Science Foundation
2018		<i>Ad Hoc</i> Reviewer
2019-	Science of Science Program	National Science Foundation
2019-		<i>Ad Hoc</i> Reviewer

### **Editorial Activities**

#### ***Ad hoc* Reviewer**

Addiction  
American Economic Review  
American Journal of Epidemiology  
Annals of Family Medicine  
Annals of Internal Medicine  
American Sociological Review  
British Medical Journal  
Clinical Infectious Disease  
Health Affairs  
Health Services Research  
JAMA  
JAMA Health Forum  
JAMA Internal Medicine  
JAMA Network Open  
JAMA Psychiatry  
JAMA Surgery  
Journal of the American Medical Informatics Association  
Journal of General Internal Medicine  
Journal of Health Economics  
Journal of Telemedicine and Telecare  
Milbank Quarterly  
Nature Human Behavior  
Nature Medicine  
New England Journal of Medicine  
Pediatrics  
PLoS Medicine  
Psychiatric Services  
Social Science & Medicine  
The Lancet Psychiatry

#### **Other Editorial Roles**

2013-2015	Assistant Editor	Healthcare: The Journal of Delivery Science and Innovation
2015-	Associate Editor	

### **Honors and Prizes**

2005	Phi Beta Kappa	Yale University	
2005	Bach Society Prize	Yale University	Outstanding accomplishments in the performing arts at Yale
2009	2 <sup>nd</sup> Prize Essay Contest	Arnold P. Gold Foundation	
2010	Doris Duke Foundation Clinical Research Fellowship	Doris Duke Foundation	
2011	Soma Weiss Award	HMS	For excellence in research
2011	Daniel Ford Research Award	Johns Hopkins Division of General Internal Medicine	
2012	Martin P. Solomon Primary Care Scholarship Award	BWH	
2016	Mack Lipkin Sr. Award Finalist	Society for General Internal Medicine	For outstanding abstract by a trainee
2017	Milton W. Hamolsky Jr. Award Winner	Society for General Internal Medicine	For outstanding abstract by junior faculty
2017	Best of Annual Research Meeting Abstract	AcademyHealth	Best abstract in “Behavioral Health” theme
2018	Best Published Research Paper of 2017	Society for General Internal Medicine	
2018	Milton W. Hamolsky Jr. Award Finalist	Society for General Internal Medicine	For outstanding abstract by junior faculty
2018-19	Outstanding Peer Reviewer	Annals of Internal Medicine	
2019	Finalist, 25 <sup>th</sup> Annual Health Care Research Award	National Institute for Health Care Management Foundation	
2019	Best of Annual Research Meeting Poster	AcademyHealth	Best poster in “Improving Quality, Safety and Value” theme
2019	Best of Annual Research Meeting Abstract	AcademyHealth	Best abstract in “Behavioral Health” theme
2019	AcademyHealth Publication-of-the-Year Award	AcademyHealth	
2019	Best of 2019	Annals of Internal Medicine	One of 10 papers selected by editor-in-chief as “the best of <i>Annals</i> in the past year”
2019	Outstanding Peer Reviewer	Health Services Research	



2020	Best of Annual Research Meeting Poster	AcademyHealth	Best poster in “Behavioral Health” theme
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**Report of Funded and Unfunded Projects**

**Funding Information**

**Past**

- 2014-2015    The impact of payment reform on physician referrals, patient flows and health care costs  
 National Institute for Health Care Management [Investigator-Initiated Research Grant]  
 Lead Author and Co-Investigator (PI: Bruce Landon)
- 2017            Evaluating the Blue Shield of California Narcotic Safety Initiative  
 Jointly funded by the California Health Care Foundation and Blue Shield of California  
 PI (\$80,000) [Investigator-Initiated Grant]  
 An evaluation of a set of formulary changes to promote safe narcotic prescribing in on of California’s largest insurers
- 2016-2018    Evaluating the Los Angeles Department of Health Services eConsult Program  
 Jointly funded by the California Health Care Foundation and Blue Shield Foundation of California  
 Co-PI (\$125,000) (Other PI: Ateev Mehrotra) [Investigator-Initiated Grant]  
 A two-year evaluation of the impact of the eConsult program in the Los Angeles Department of Health Services, the second largest public health system in the US.
- 2018-2020    Evaluating the NYC Health + Hospitals eConsult Program  
 NYC Health + Hospitals  
 PI (\$85,000) [Investigator-Initiated Grant]  
 A one-year evaluation of the impact of the eConsult program in New York City’s Health + Hospitals, the largest public health system in the US.
- 2018-2020    Improving Specialty Care Delivery in the Safety Net with Natural Language Processing  
 R21 – National Institute on Minority Health and Disparities  
 Multi-PI (\$130,000) (Co-PI: Timothy Miller, Boston Children’s Hospital)  
 In collaboration with safety net systems in Los Angeles, San Francisco and New York City, this proposal aims to enhance delivery of specialty care delivery in safety net health systems by developing natural language processing tools to provide feedback on the specialty being delivered in a health system.
- 2019-2020    Evidence-based Approaches to Opioid Epidemic Abatement  
 Laura and John Arnold Foundation  
 Co-Investigator (\$400,000) (PI: Richard Frank)  
 This project is a multi-institute collaboration to review the existing literature on delivery reforms for opioid use disorder and recommended the highest value potential investments for opioid abatement funds from opioid manufacturer lawsuits.

**Current**

- 2018-2022    The Changing Landscape of Post-Acute Care and Health Outcomes for Older Adults  
 K23 – National Institute on Aging  
 PI (\$190,000)

This training grant proposes integrated training and research to understand how payment reform influences post-acute care and health outcomes for older adults.

- 2019-2024 Use of prescription opioids and associated adverse patient outcomes following general medical hospitalizations in Medicare  
R01 – Agency for Healthcare Research and Quality  
Co-Investigator (\$375,000) (PI: Anupam Jena)  
This proposal aims to examine the factors influencing opioid prescribing at hospital discharge and its relationship to long-term opioid use and patient outcomes
- 2020-2022 Understanding the Use and Discontinuation of Chronic Opioid Therapy in Older Adults to Guide Opioid Prescribing Policy  
Research Grant – Retirement Research Foundation  
Principal Investigator (\$100,000)  
This grant proposes to study current trends in chronic opioid therapy in older adults, patterns of discontinuation and tapering of chronic opioid therapy and patient outcomes tied to discontinuation.
- 2020-2021 Reducing antibiotic prescribing through a prioritized vaccination strategy  
Wellcome Trust Fund  
Co-Investigator (\$161,930) (PI: Yonatan Grad)  
This project proposes to evaluate the association of PCV13 uptake on the recent declines in outpatient antibiotic prescribing in the US and estimate the antibiotic prescribing attributable to the most common pathogens and variation by age, demographic, and geography.
- 2020-2021 Understanding drivers of variation in antibiotic prescribing in the US  
HSPH Acceleration Award  
Co-Investigator (\$83,000) (PI: Yonatan Grad)  
This project proposes to define the drivers of temporal and geographic variation in outpatient antibiotic prescribing in the US.
- 2020-2021 Measuring the resilience of nursing homes during COVID-19  
HSPH Acceleration Award  
Principal Investigator (\$100,000)  
This project proposes to perform a nationally representative survey of SNF executive directors to address this evidence gap. We will measure how SNFs have responded to COVID-19 and the capacity for continued response to inform policy to allocate funds and provide other resources to support implementation and address the critical weaknesses in SNFs' capacity now and in future waves.
- 2021-2023 The Effect of De-Prescribing Antipsychotics on Health and Quality of Life for People with Dementia  
R21 – National Institute on Aging  
Co-Investigator (\$184,000) (PI: Adam Sacarny)  
This project will examine the effects of a national randomized intervention to decrease anti-psychotic use on nursing home and community-dwelling residents with dementia and its downstream effects on clinical outcomes and functional status.

### **Projects Submitted for Funding**

- Pending The Use of Telemedicine in the Care of Nursing Home Residents with Alzheimer's Disease and Related Dementias During and After the COVID-19 Pandemic  
R01 – National Institute on Aging - **Percentile Score 17.0**  
Principal Investigator (\$400,000)

This proposal aims to examine how nursing homes used telemedicine during the COVID-19 pandemic and its impact on care for residents with dementia.

Pending Physician Subspecialization and the Health and Health Care of Older Americans  
R01 – National Institute on Aging  
Principal Investigator (\$400,000)  
This proposal aims to examine the landscape of subspecialization in the US, its evolution over time and impact on health outcomes for older Americans.

## **Report of Local Teaching and Training**

### **Teaching of Students in Courses**

#### **HMS/HSDM/DMS Courses**

2015	Health Care Policy, HC750.0 1 <sup>st</sup> year medical students	HMS 8 separate 2-hour tutorial sessions
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#### **Other Harvard University Courses**

2018-	HPM 505, Health Care Delivery Reform in the US MPH and other Master's Degree students	HSPH 2.5 credit course, 16 weeks with 3 hours of class weekly
2018	GHP 555, Management Practices in Health Care Delivery Master's level students from in health leadership positions globally	HSPH 1.5-hour guest lecture and discussion

### **Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs)**

2012	Pulmonary function tests for the internist	BWH 1.5 hour lecture
2013	Intern curriculum: various clinical topics including chest pain, electrolytes and altered mental status	BWH 3 separate 1 hour discussion sections
2013	Musculoskeletal medicine for primary care: the ankle	BWH 0.5 hour lecture
2013	Morning reports: various clinical topics including endocarditis, hypercalcemia, and ARDS	BWH 3 separate 1 hour lectures
2014	The medical neighborhood: how to make care coordination a reality	BWH 1 hour lecture
2015	Clinical epidemiology: quasi-experimental methods	BWH 1 hour lecture
2017	IM Residency Management Leadership Track Lecture: Understanding physician prescribing of opioids	BWH 1 hour lecture
2019	Noon Conference Lecture: The role of physicians in the opioid crisis	BWH 1 hour lecture

2019	IM Residency Management Leadership Track Lecture: Bundled payment models in the US	BWH 1 hour lecture
2016-2020	Journal Club for primary care residents	BWH 1 hour lecture
2020	Opioid prescribing and the opioid crisis	Partners Center of Excellence in Health Policy Certificate Course 1 hour lecture
2021	Primary Care Residency Talk: Introduction to Health Insurance	BWH 1 hour lecture
2020-2021	Scientific Writing	HMS GIM Fellowship 1 hour lectures

### **Clinical Supervisory and Training Responsibilities**

2011-2014	Internal medicine resident, BWH	30 weeks a year
2016-	Primary care clinical preceptor, BWH	8-16 hours monthly

### **Laboratory and Other Research Supervisory and Training Responsibilities**

2010-2013	Non-resident pre-medical tutor, Cabot House, Harvard University	Regular mentorship for 6 months
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### **Informally Supervised Trainees and Faculty:**

2017-2018	Scott Olesen, PhD / Mentored as post-doctoral fellow at HSPH. Accomplishments: Two first-author peer-reviewed manuscripts in BMJ and eLife describing antibiotic use in the US and association with antibiotic resistance. Now an Analyst at the Center for Public Health Preparedness and Resilience.	
2017-2019	Sumit Agarwal, MD / Mentored as general internal medicine fellow, HMS and BWH. Mentored on two first-author papers on new primary billing codes in Medicare. One published in JAMA, second in Health Affairs. Now graduate student at Harvard University in the health policy PhD program.	
2018-2019	Dennis Lee, BA / Mentored as research assistant at HSPH. Authored a paper on buprenorphine waiver use by NPs published in Health Affairs, another manuscript on NPs' effect on travel time to buprenorphine prescribers is under review. Now a graduate student at Vanderbilt University in the health policy PhD program.	
2018-	Marema Gaye, BA / Mentored as research assistant at HSPH. Co-authored 4 published articles on topics including opioid prescribing and buprenorphine access published in JAMA, Annals of Internal Medicine, Health Affairs and JAMA Network Open. Another peer-reviewed manuscript under revision at JAMA Health Forum. Matriculating to graduate school in 2021, accepted at several health policy PhD programs including Harvard.	
2019-2020	Adrienne Sabety, PhD / Mentored as Graduate student at FAS. Mentored on first-author paper on PCP exit and care outcomes. Also contributed to RRF grant proposal which was award. Mentored on first author JAMA IM paper on primary care physician exiting. Now assistant professor of economics at Notre Dame University.	

- 2019- Regan Bergmark, MD / Mentored as Associate Surgeon, Division of Otolaryngology, BWH. Serving as a mentor on K08 application to AHRQ.
- 2019- Christopher Worsham, MD / Mentored as pulmonary-critical care fellow at MGH. Produced first authored publication under revision at Health Affairs and commentary in JAMA Network Open.
- 2020- Sadiq Patel, PhD / Mentored as Post-doctoral associate, Harvard Medical School. Mentored on two first-author papers on telemedicine published in JAMA and Health Affairs.
- 2020- Stephen Kissler, PhD / Mentored as post-doctoral fellow at HSPH. Accomplishments: Two grants on antibiotic resistance from Wellcome Trust and HSPH internal grant. Mentored on first-author publication in Clinical Infectious Disease. Preparing further manuscripts on antibiotic resistance and its relationship to vaccination patterns.
- 2021- Lisa Simon, MD, DMD / Mentored as resident at BWH. Mentored on manuscripts in preparation on dental health policy, mentor on internal BWH residency research proposal.
- 2021- Anna Goldman, MD, MPH / Mentored as junior faculty at Boston Medical Center. Mentored on manuscripts on physician workforce trends in the US in preparation.

**Formal Teaching of Peers**

*No presentations below were sponsored by outside entities.*

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|-----------|--|---------------------------------------|
| 2017-2018 | “Update in Health Policy”<br>Office Practice of Primary Care Medicine, HMS   | Single Presentation,<br>Boston, MA    |
| 2018      | “Understanding Physician Opioid Prescribing”,<br>Treating Addictions Annual CME Course, HMS and<br>Cambridge Health Alliance | Single Presentation,<br>Cambridge, MA |

**Formally Mentored Harvard Medical, Dental and Graduate Students:**

- 2017-2019 Adrian Mosqueira, MA / Mentored as graduate student at Harvard University on one of his dissertation papers. Mentored on first-author paper examining physician compensation and association with quality of care in Inquiry. Now an analyst at Greylock-McKinnon Associates
- 2017-2020 Tamara Beetham, BA / Mentored on scholarly projects as master’s student at HSPH and PhD student at Yale. Mentored on 3 first-author papers on addiction treatment at JAMA, Annals of Internal Medicine and Health Affairs. Winner of Best of ARM abstract award from AcademyHealth. Now graduate student at Yale SPH.
- 2019-2020 Xiyu “Grace” Ding MS / Served as a member of Master’s thesis committee. Published two first-author abstracts for Informatics conference on natural language processing with eConsults. Now research data scientist at Children’s Hospital Boston.
- 2019-2020 Nazleen Khan BA / PhD candidate in Population Health Sciences (Epidemiology) at HSPH. Member of Dissertation Committee and co-author on manuscript under review at BMJ on opioid co-prescribing and risk of overdose.
- 2020- Caroline Behr BA / MD candidate at HMS. Mentor on her Scholars in Medicine project. Submitted one manuscript on access to care during COVID-19, two in preparation on telemedicine access and monoclonal antibody use during the pandemic.

## **Local Invited Presentations**

*No presentations below were sponsored by outside entities.*

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|------|--|
| 2014 | Ginger.io: Improving chronic disease management with mobile technology/Invited lecture<br>BWH Center for Patient Safety Research and Practice, Executive Council Meeting, Boston, MA |
| 2017 | Specialty Care in the Safety Net/Grand Rounds<br>Cambridge Health Alliance, Cambridge, MA  |
| 2017 | Understanding Physician Opioid Prescribing/Grand Rounds<br>Center for Addiction Medicine, Massachusetts General Hospital (MGH), Boston, MA   |
| 2018 | Opioid Prescribing and the Opioid Crisis in the US/Invited lecture<br>Harvard Kennedy School Healthcare Policy Leadership Conference, Cambridge, MA                                  |
| 2019 | Understanding Health Care Delivery in the US<br>Harvard Advanced Leadership Institute, Cambridge, MA   |
| 2019 | Bundled Payments for Joint Replacement/Grand Rounds<br>Brigham and Women's Faulkner Hospital   |
| 2019 | Opioid Prescribing and the Opioid Crisis in the US/Invited seminar<br>Beth Israel Deaconess Medical Center (BIDMC), Smith Center for Outcomes Research, Boston, MA                   |
| 2020 | Exploring Specialty Care Delivery in the US/Grand rounds<br>Department of Allergy, Massachusetts General Hospital, Boston, MA  |
| 2020 | Examining Opioid Use Disorder Treatment with Secret Shopper Surveys<br>Division of Health Policy and Insurance Research, Harvard Pilgrim Health Care Institute, Boston, MA           |
| 2021 | Implementing eConsult in the Safety Net: What is the Frontline Impact?<br>PEPReC Seminar, VA Boston Health System, Boston, MA  |

## **Local Abstract Oral Presentations**

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| 2011 | Physician networks are associated with the cost of intensity of care in US hospitals<br>Soma Weiss Research Day, HMS |
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## **Report of Regional, National and International Invited Teaching and Presentations**

### **Invited Presentations and Courses**

*No presentations below were sponsored by outside entities.*

#### **Regional**

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| 2011 | Mapping physician networks and healthcare delivery in US hospitals/Invited oral presentation<br>Social Networks and Healthcare Summit 2011, Cambridge, MA    |
| 2011 | Creativity in music and medicine/Invited lecture<br>Cultivating Humanism: A Symposium on Medicine and the Arts, Massachusetts Medical Society, Cambridge, MA |
| 2011 | Mapping physician networks with self-reported and administrative data/Invited oral presentation<br>SGIM New England Regional Conference, Boston, MA          |

- 2012 Mapping physician networks and healthcare delivery in US hospitals/Invited lecture  
RAND Corporation, Boston, MA
- 2015 Validating the Master Patient Index in the Massachusetts All Payer Claims  
Database/Invited lecture  
Center for Health Information and Analysis, Boston, MA
- 2015 Implementation of an electronic referral system in a large academic medical  
center/Plenary Session  
SGIM New England Regional Conference, Boston, MA
- 2017 Day of the Week and Physician Decision Making/Invited oral presentation  
SGIM New England Regional Conference, Boston, MA
- 2017 Understanding Physician Opioid Prescribing/Grand Rounds  
MetroWest Medical Center, Framingham, MA
- 2018 Insurance turnover, care fragmentation and emergency department utilization in  
Massachusetts/Invited Guest Lecture  
Massachusetts Department of Public Health, Boston, MA
- 2019 Two-Year Evaluation of Mandatory Bundled Payments for Joint Replacement in  
Medicare/Invited seminar  
Department of Quantitative Health Sciences, University of Massachusetts Medical  
School (UMMS)

**National**

- 2010 Physicians networks are associated with the cost and intensity of care in US  
hospitals/Invited oral presentation  
NetSci 2010, Cambridge, MA
- 2011 Mapping physician networks with self-reported and administrative data/Invited oral  
presentation  
SGIM Annual Conference, Phoenix, AZ
- 2011 Research models and quality assessment in student clinics/Invited oral presentation  
Society for Free Student-Run Clinics Annual Conference, Houston, TX
- 2014 Understanding variation in PCP referral patterns in a large multispecialty practice  
group/Invited oral presentation  
SGIM Annual Conference, San Diego, CA
- 2015 Insurance turnover, care fragmentation and emergency department utilization in  
Massachusetts, 2011-2012/Invited oral presentation  
SGIM Annual Conference, Toronto, ON
- 2015 Insurance turnover care fragmentation and emergency department utilization in  
Massachusetts, 2011-2012/Invited oral presentation  
AcademyHealth Annual Research Meeting, Minneapolis, MN
- 2015 Contributions of patients' clinical and social characteristics to difference in hospital  
readmission rates/Invited oral presentation  
AcademyHealth Annual Research Meeting, Minneapolis, MN
- 2017 Los Angeles Safety-Net Program eConsult System was rapidly adopted and  
decreased wait times to see specialists/ Invited oral presentation  
Health Affairs Delivery System Innovation Issue Press Briefing, Washington DC
- 2017 Widespread adoption of electronic specialty referrals in a large safety-net system  
enables rapid access to specialty care/Invited oral presentation  
SGIM Annual Conference, Washington, DC

- 2017 Patient mortality during unannounced accreditation surveys at US hospitals/Invited oral presentation  
AcademyHealth Annual Research Meeting, New Orleans, LA
- 2017 Day of the Week and Physician Decision Making/Invited oral presentation  
AcademyHealth Annual Research Meeting, New Orleans, LA
- 2017 Emergency physician opioid prescribing patterns and risk of long-term use/Invited lecture  
Collaborative for Effective Prescription Opioid Policies (CEPOP) Steering Committee Meeting, Washington, DC
- 2018 A California Health Plan's Opioid Formulary Change Led to a Reduction in Initiation of Extended-Release Opioids/Invited oral presentation  
SGIM Annual Conference, Denver, CO
- 2018 Diffusion of telemedicine in a large commercially insured population/Invited oral presentation  
SGIM Annual Conference, Denver, CO
- 2018 A California Health Plan's Opioid Formulary Change Led to a Reduction in Initiation of Extended-Release Opioids /Invited oral presentation  
AcademyHealth Annual Research Meeting, Seattle, WA
- 2018 Diffusion of telemedicine in a large commercially insured population/Invited oral presentation  
AcademyHealth Annual Research Meeting, Seattle, WA  
SGIM Annual Conference, Washington, DC
- 2018 Implementing eConsult in the Safety Net: What is the Frontline Impact?/Invited lecture  
New York City Health + Hospitals Office of Population Health, New York City, NY
- 2019 Appointment Timing and Opioid Prescribing/Invited oral presentation  
SGIM Annual Conference, Washington, DC
- 2019 An Audit Survey of Access to Office-Based Buprenorphine Treatment in States with High Rates of Opioid-Related Mortality/Invited oral presentation  
SGIM Annual Conference, Washington, DC
- 2019 Expanding Supply of Medication Assisted Treatment to Underserved Areas: Buprenorphine Waivers for Advanced Practice Providers/Invited oral presentation  
SGIM Annual Conference, Washington, DC
- 2019 Two-Year Evaluation of Mandatory Bundled Payments for Joint Replacement in Medicare/Invited oral presentation  
AcademyHealth Annual Research Meeting, Washington, DC
- 2019 Two-Year Evaluation of Mandatory Bundled Payments for Joint Replacement in Medicare/Invited oral presentation  
Conference of the American Society of Health Economists (ASHEcon), Washington, DC
- 2019 Opioid Prescribing and the Opioid Crisis in the US/Invited presentation  
Opioids: Policy to Practice, Ypsilanti, MI
- 2019 An Audit Survey of Access to Office-Based Buprenorphine Treatment in States with High Rates of Opioid-Related Mortality/Invited oral presentation  
Collaborative for Effective Prescription Opioid Policies (CEPOP) Steering Committee Meeting, Washington, DC
- 2019 Case Study: Use Case Applications of Data in Value-Based Care Programs/Invited panelist  
AcademyHealth Health Data Leadership Initiative Meeting, Washington, DC



- 2019 Adoption of Buprenorphine Waivers by Advanced Practice Providers Highest in Rural Areas with Expanded Scope of Practice/ Invited oral presentation  
Health Affairs Rural Health Issue Press Briefing, Washington DC
- 2019 Trends and Natural Experiments in Fragmentation of Care in the US/ Invited Grand Rounds  
Center for Medicare and Medicare Innovation, Washington DC
- 2020 The role of telemedicine and eConsults in the COVID-19 era/ Invited webinar speaker  
The E-Consult Workgroup
- 2020 What is the role of telemedicine post- COVID-19?/ Invited webinar speaker  
Planned Parenthood Federation of America Leadership Seminar
- 2020 Trends in Utilization of Telemedicine among Rural Medicare Beneficiaries, 2010 to 2019 / Invited speaker, AcademyHealth Annual Research Meeting, Virtual Meeting
- 2021 The Opioid Epidemic and COVID-19: Where Are We Now? / Invited speaker, National Conference of State Legislatures, Opioid Policy Fellows Program, Virtual Lecture
- 2021 Growth of Telemedicine Before, During and After the Pandemic / Invited speaker, OptumLabs Physician Executive Group, Virtual Lecture
- 2021 Hospital strategic response to incentive in bundled payment for joint replacement surgery / Invited speaker, ASHEcon 2021, Virtual Session
- 2021 Partisan and physician prescribing of proposed COVID-19 treatments / Invited speaker, CHIBE/LDI Research Seminar, University of Pennsylvania, Virtual Lecture
- 2021 Partisan and physician prescribing of proposed COVID-19 treatments / Invited speaker, TDC Research Seminar, Dartmouth University, Virtual Lecture
- 2021 Partisan and physician prescribing of proposed COVID-19 treatments / Invited speaker, CHSOR Research Seminar, Johns Hopkins Bloomberg School of Public Health, Virtual Lecture
- 2021 Outpatient care delivery and telemedicine during the COVID-19 pandemic / Invited speaker, Aging Research on COVID-19 Virtual Conference, National Institute on Aging, National Institutes of Health, Virtual Lecture
- 2021 Implementing eConsult in the Safety Net: The Experience in NYC Health + Hospitals/ The E-Consult Workgroup, Invited webinar speaker
- 2021 Telemedicine and health care delivery during the COVID-19 pandemic / Invited speaker, Federation of State Medical Boards, Virtual Lecture
- 2021 Partisan and physician prescribing of proposed COVID-19 treatments / Invited speaker, CHEPAR Meeting, Washington University School of Medicine in St. Louis, Virtual Lecture

**Report of Clinical Activities and Innovations**

**Current Licensure and Certification**

2013 Massachusetts Medical License  
 2014 Board Certified in Internal Medicine, American Board of Internal Medicine

**Practice Activities**

2011-	Ambulatory Primary Care	Brigham and Women’s Advanced Primary Care Associates, South Huntington, Boston, MA	2 sessions per week
2014-	Hospitalist	BWFH	1-2 sessions per month

**Report of Technological and Other Scientific Innovations**

US Patent Application #20,130,073,313, filed July 8, 2011	Method of using Physician Social Networks Based on Common Patients to Predict Cost and Intensity of Care in Hospitals <i>Developed as primary inventor a new method for assessing physician social networks that was licensed and used by start-up ActivateNetworks (acquired 2015)</i>
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**Report of Education of Patients and Service to the Community**

*No presentations below were sponsored by outside entities.*

**Activities**

2008-2013	Community Engagement Committee, Chair, Longwood Symphony Orchestra
2009-2012	Member, Board of Trustees, Longwood Symphony Orchestra
2012-2015	Vice Chair, Board of Trustees, Longwood Symphony Orchestra
2015-	Chair, Board of Trustees, Longwood Symphony Orchestra <i>Served as member since 2009 and chair since 2015 for the Longwood Symphony Orchestra, an orchestra of medical professionals in Boston that holds each concert as a benefit for a local underserved non-profit organization.</i>
2017-2019	Examining Physician Prescribing of Opioids, Research Talk for Lay Audience Summer “Hot Topics” Lecture Series, HSPH, Boston, MA

**Educational Material for Patients and the Lay Community**

***Books, monographs, articles and presentations in other media***

2017	Long-term opioid addiction can start in the ER	Op-Ed	Los Angeles Times
2017	When Clinicians Know They’re Being Watched, Patients Fare Better	Blog Post	Harvard Business Review
2017	How Health Care Providers Can Help End the Overprescription of Opioids	Blog Post	Harvard Business Review
2018	The Link Between August Birthdays and ADHD	Op-Ed	New York Times

2020	Need to see a health care provider during coronavirus? Here's what to do next	Op-Ed	CNN
2020	What we need to know before we can end social distancing	Op-Ed	Washington Post
2020	After the pandemic, visiting the doctor will never be the same. And that's fine.	Op-Ed	Washington Post
2020	Covid-19 is ravaging nursing homes. We're getting what we paid for	Op-Ed	Washington Post
2020	A second, hidden pandemic will follow covid-19. We need to plan for it.	Op-Ed	Washington Post
2020	We allowed coronavirus to ravage nursing homes. But there's still time to save lives	Op-Ed	Los Angeles Times

## **Recognition**

### *Selected Media Coverage*

2012	Archives manuscript on trends in referral patterns	New York Times, Washington Post, Health Affairs Blog
2013	JAMA manuscript on trends in antibiotics for sore throat	CNN, NPR, Boston Globe
2014	JAMA IM manuscript on trends in antibiotics for bronchitis	LA Times, USA Today, Businessweek
2015	JAMA IM manuscript on patient characteristics and readmission rates	Washington Post, Reuters, Vox.com
2016	BMJ manuscript on adverse outcomes during EHR implementation	POLITICO, STAT, NEJM Journal Watch
2017	NEJM manuscript on opioid prescribing and risk of long-term use	NY Times, LA Times, Washington Post, Reuters, Fox News, Time, STAT
2017	JAMA IM manuscript on patient mortality during accreditation surveys	NY Times, Fox News, STAT, Medscape, US News and World Report
2017	JAMA IM manuscript on low-value service use in the safety-net	NY Times, Forbes
2017	JAMA IM manuscript on patient satisfaction in Medicaid	NY Times, Washington Post, NPR, Forbes, CNN
2017	NEJM manuscript on opioid prescribing and policy evaluation	Boston Globe, POLITICO

2018	CNN story on opioid manufacturer payments to physicians and prescribing patterns	CNN
2018	JAMA Psychiatry study on peer comparison letter trial for quetiapine overprescribing	NPR, POLITICO
2018	JAMA study on trends in telemedicine	Reuters, Forbes, POLITICO, Axios, Modern Healthcare, Yahoo News
2018	NEJM study on ADHD diagnosis and classroom context	NY Times, Wall Street Journal, Associated Press, NPR, Washington Post, Reuters, CNN, BuzzFeed
2019	NY Times article featuring Health Affairs 2017 and JAMA IM 2018 studies on eConsults	NY Times
2019	Annals of Internal Medicine study on buprenorphine prescribers and wait time	AP, NY Times, Reuters, HealthDay, WBUR
2019	JAMA Network Open study on opioid prescribing and appointment time	HealthDay, Modern Healthcare, NPR, Stat
2019	Health Affairs study on buprenorphine waiver adoption among nurse practitioners and physician assistants	NPR, Kaiser Health News
2020	Interview following Washington Post "Hidden Pandemic" editorial	NPR Science Friday
2020	Health Affairs study on shortages of staff and PPE in nursing homes	AP, Time, Washington Post, ABC News, Modern Healthcare, World Economic Forum
2020	Is Telemedicine The Future of Health Care? Feature Interview	CNBC
2020	JAMA study on access to opioid treatment in residential treatment centers	NPR, Axios, MedPage Today (Feature Story)
2020	Interviewed as expert for episode on the state of opioid policy	TradeOffs podcast
2021	Health Affairs study on residential addiction treatment facilities	NPR, WBUR, Health Affairs Podcast "A Health Podyssey"
2021	Health Affairs study on variation in telemedicine use during COVID-19	Data featured in WSJ article
2021	Interviewed by Health Affairs editor-in-chief about Health Affairs study on telemedicine use during the COVID-19 pandemic	Health Affairs Podcast "A Health Podyssey"
2021	Interview with CBSN News on COVID-19 pandemic's effect on the opioid crisis	CBSN

**Report of Scholarship****Peer-Reviewed Scholarship in print or other media****Research investigations**

\* denotes co-first or co-senior authorship

\*\* denotes authorship by mentee

Google Scholar Profile: <https://scholar.google.com/citations?user=W8iw9UkAAAAJ&hl=en>

Harvard Catalyst Profile: <https://connects.catalyst.harvard.edu/Profiles/display/Person/2952>

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8. **Barnett ML**, Linder JA. Antibiotic prescribing to adults with sore throat in the United States, 1997-2010. *JAMA Intern Med*. 2013;174(1):138-140.
9. **Barnett ML**, Linder JA. Antibiotic prescribing for adults with acute bronchitis in the United States, 1996-2010. *JAMA*. 2014 May 21;311(19):2020-2022.

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Wears RL. When hospitals switch to electronic records. *BMJ.* 2016;354:i3941.
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23. **Barnett ML**, McWilliams JM. Changes in Specialty Care Use and Leakage in Medicare Accountable Care Organizations. *American Journal of Managed Care*. 2018;24(5):e294-e302.
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25. Lee MS, Ray KN, Mehrotra A, Giboney P, Yee HF, **Barnett ML**. Primary Care Practitioners' Perceptions of Electronic Consult Systems: A Qualitative Analysis. *JAMA Intern Med*. 2018;178(6):782-789.
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- Editorial: Liao JM, Navathe AS. Nudging Physicians to Reduce Quetiapine Using Medicare Letters: Following Letters of the Law? *JAMA Psychiatry*. 2018;75(10):989-990.
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60. **Barnett ML**, Joynt Maddox KE, Orav EJ, Grabowski DC, Epstein AE. Association of Skilled Nursing Facility Participation in a Bundled Payment Model With Institutional Spending for Joint Replacement Surgery. *JAMA* 2020; 324(18): 1869-18777.
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63. Patel SY\*\*, Mehrotra A, Huskamp HA, Uscher-Pines L, Ganguli I, **Barnett ML**. Trends in Outpatient Care Delivery and Telemedicine During the COVID-19 Pandemic in the United States. *JAMA Internal Medicine*, 2021. 181(3) 388-391.
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65. Beetham T\*\*, Saloner B, Gaye M\*\*, Wakeman SE, Frank RG, **Barnett ML**. Admission Practices And Cost Of Care For Opioid Use Disorder At Residential Addiction Treatment Programs In The US. *Health Affairs* 2021;40(2):317–25
66. Neprash HT, Sheridan B, Jena AB, Grad YH, **Barnett ML**. Evidence Of Respiratory Infection Transmission Within Physician Offices Could Inform Outpatient Infection Control. *Health Affairs* 2021;40(8):1321–7.
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71. Wilcock AD\*, **Barnett ML\***, McWilliams JM, Grabowski DC, Mehrotra A. Hospital Responses to Incentives in Episode-Based Payment for Joint Surgery: A Controlled Population-Based Study. *JAMA Internal Medicine* 2021; 181(7) 932-940.

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73. Sabety AH\*\*, Jena AB, **Barnett ML**. Changes in health care use and outcomes after turnover in primary care. *JAMA Internal Medicine* 2021;181(2):186–94.
74. Riedel L, Uscher-Pines L, Mehrotra A, Busch AB, **Barnett ML**, Raja P, Huskamp HA. Use of Telemedicine for Opioid Use Disorder Treatment–Perceptions and Experiences of Opioid Use Disorder Clinicians. *Drug and Alcohol Dependence* 2021;108999.
75. Patel SY\*\*, McCoy RG, **Barnett ML**, Shah ND, Mehrotra A. Diabetes care and glycemic control during the COVID-19 pandemic in the United States. *JAMA Internal Medicine* 2021; e213047.
76. Patel SY\*\*, Huskamp HA, **Barnett ML**, Zubizaretta JR, Zachrison KS, Busch AB, Wilcock AD, Mehrotra A. Association Between Telepsychiatry Capability and Treatment of Patients With Mental Illness in the Emergency Department. *Psychiatric Services* 2021; appi-ps202100145.
77. Neprash HT, Gaye M\*\*, **Barnett ML**. Abrupt Discontinuation of Long-term Opioid Therapy Among Medicare Beneficiaries, 2012–2017. *Journal of general internal medicine* 2021;36(6):1576–83.
78. McGarry BE, Gandhi AD, Grabowski DC, **Barnett ML**. Larger Nursing Home Staff Size Linked To Higher Number Of COVID-19 Cases In 2020. *Health Affairs* 2021;10–1377.
79. Khan NF\*\*, Bykov K, Glynn RJ, **Barnett ML**, Gagne JJ. Co-prescription of opioids with other medications and risk of opioid overdose. *Clinical Pharmacology & Therapeutics* 2021; 110(4) 1011-1017.
80. Joynt Maddox KE, **Barnett ML**, Orav EJ, Zheng J, Grabowski DC, Epstein AM. Savings and outcomes under Medicare’s bundled payments initiative for skilled nursing facilities. *Journal of the American Geriatrics Society* 2021; Published Online August 11, 2021.
81. Gray BM, Vandergrift JL, Weng W, Lipner RS, **Barnett ML**. Clinical Knowledge and Trends in Physicians’ Prescribing of Opioids for New Onset Back Pain, 2009-2017. *JAMA Network Open* 2021;4(7):e2115328–e2115328.
82. Gray BM, Vandergrift JL, Barnhart BJ, Reddy SG, Chesluk BJ, Lipner RS, Lynn LA, **Barnett ML**, Landon BE. Changes in Stress and Workplace Shortages Reported by US Critical Care Physicians Treating Coronavirus Disease 2019 Patients. *Critical Care Medicine* 2021;49(7):1068–82.
83. Faust JS, Du C, Mayes KD, Li S, Lin Z, **Barnett ML**, Krumholz HM. Mortality from drug overdoses, homicides, unintentional injuries, motor vehicle crashes, and suicides during the pandemic, March-August 2020. *JAMA* 2021; 326(1) 84-86.
84. McGarry BE, Shen K, **Barnett ML**, Grabowski DC, Gandhi AD. Association of Nursing Home Characteristics With Staff and Resident COVID-19 Vaccination Coverage. *JAMA Intern Med* 2021. Published Online, September 16, 2021.

Editorial: Ward E, Covinsky KE. COVID-19 Vaccination Coverage Among Nursing Home Staff. *JAMA Inter Med* 2021. Published Online, September 16, 2021.

**Non-peer reviewed scholarship in print or other media**

## Proceedings of meetings or other non-peer reviewed scholarship

1. **Barnett ML**. Doors. Acad Med. 2009 Nov;84(11):1560-1

## Perspectives and Viewpoints

1. Song Z, Sequist TD, **Barnett ML**. Patient Referrals: A Linchpin for Accountable Care, JAMA. 2014;312(6):597-8.
2. Ostrovsky A, **Barnett ML**. Accelerating change: fostering innovation in healthcare delivery at academic medical centers. Healthc(Amst). 2014 Mar 31;2(1):9-13.
3. **Barnett ML**, Grabowski DC, Mehrotra A. Home-to-Home Time — Measuring What Matters to Patients and Payers. N Engl J Med. 2017;377:4–6.
4. **Barnett ML**, Gray J, Zink A, Jena AB. Coupling Policymaking with Evaluation — The Case of the Opioid Crisis. N Engl J Med. 2017 Dec 14;377(24):2306-2309.
5. Wakeman SE, **Barnett ML**. Primary Care and the Opioid-Overdose Crisis — Buprenorphine Myths and Realities. New Engl J Med. 2018;379(1):1-5.
6. **Barnett ML**, Grabowski DC, Mehrotra A. Post-Acute Care: The Piggy Bank for Savings in Alternative Payment Models? N Engl J Med. 2019;381(4):302-303.
7. **Barnett ML**. Opioid Prescribing in the Midst of Crisis - Myths and Realities. N Engl J Med. 2020; 382 (12), 1086.
8. **Barnett ML**, Grabowski DC. Nursing homes are ground zero for COVID-19 pandemic. JAMA Health Forum. 1 (3), e200369.
9. Mehrotra A, Ray KN, Brockmeyer DM, **Barnett ML**, Bender JA. Rapidly converting to “virtual practices”: outpatient care in the era of covid-19. NEJM Catalyst Innovations in Care Delivery. 2020; 1 (2).
10. **Barnett ML**, Mehrotra A, Landon BE. Covid-19 and the Upcoming Financial Crisis in Health Care. NEJM Catalyst Innovations in Care Delivery. 2020; 1(2).
11. Cramer JD, **Barnett ML**, Anne S, Bateman BT, Rosenfeld RM, Tunkel RM, Brenner MJ. Nonopioid, multimodal analgesia as first-line therapy after otolaryngology operations: primer on nonsteroidal anti-inflammatory drugs (NSAIDs). Otolaryngology–Head and Neck Surgery 2021;164(4):712–9.
12. Beckman AL, Gondi S, Barnett ML. The hidden costs of moving care home. Am J Manag Care 2021;e64–5.
13. McCoul ED, **Barnett ML**, Brenner MJ. Reducing Opioid Prescribing and Consumption After Surgery—Keeping the Lock on Pandora’s Box. JAMA Otolaryngology–Head & Neck Surgery 2021;147(9):819–21.

## Reviews, chapters, monographs and editorials

1. Sheldon LK, **Barnett ML**. Anxiety and Uncertainty. In: Lester J, Schmitt P, eds. Cancer Rehabilitation and Survivorship: Transdisciplinary Approaches to Personalized Care. Pittsburgh (PA): Oncology Nursing Society. 2011:165-74.
2. **Barnett ML**, Choudhry NK. Practicing evidence based medicine, in Scientific American Medicine, Singh AK, editor. Hamilton (ON): Decker Intellectual Properties. 2015.

3. **Barnett ML.** Capsule Commentary on Navathe, et al., Do Changes in Post-acute Care Use at Hospitals Participating in an Accountable Care Organization Spillover to all Medicare Beneficiaries? *J Gen Intern Med.* 2018;33(6):943-943.
4. **Barnett ML,** Improving Network Science in Health Services Research. *J Gen Intern Med.* 2019;DOI:10.1007/s11606-019-05264-4
5. **Barnett ML,** Landon BE. Achieving Success under Payment Reform. More Questions than Answers. *JAMA Netw Open.* 2019;2(7):E196947.
6. **Barnett ML,** Huskamp HA. Telemedicine for Mental Health in the United States: Making Progress, Still a Long Way to Go. *Psych Services*, Published Online, December 18, 2019
7. Worsham CM\*\*, **Barnett ML.** What Role Do Families Play in the Opioid Epidemic? *JAMA Netw Open*, 2020; 3 (3), e201108.

### **Thesis**

**Barnett ML.** Mapping physician networks and their association with health care delivery in US hospitals [MD thesis with honors]. Boston: Harvard Medical School, 2011.

### **Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings**

2015	Implementation of an electronic referral system in a large academic medical center	Poster, SGIM Annual Conference, Toronto, ON
2015	Contributions of patients' clinical and social characteristics to difference in hospital readmission rates	Poster, SGIM Annual Conference, Toronto, ON
2015	Implementation of an electronic referral system in a large academic medical center	Poster, AcademyHealth Annual Research Meeting, Minneapolis, MN
2016	Overuse of low value medical services in the safety net population	Poster, SGIM Annual Conference, Hollywood, FL
2016	Overuse of low value medical services in the safety net population	Featured in Poster Walk, AcademyHealth Annual Research Meeting, Boston, MA
2016	Adverse hospitals outcomes during the period of transition to a new electronic medical record.	Mack Lipkin Sr. Award Finalist, SGIM Annual Conference, Hollywood, FL
2017	Emergency physician opioid prescribing patterns and risk of long-term use	Milton W. Hamolsky Jr. Award Winner, SGIM Annual Conference, Washington, DC
2017	Emergency physician opioid prescribing patterns and risk of long-term use	Winner of Best Abstract for Behavioral Health Theme, AcademyHealth Annual Research Meeting, New Orleans, LA
2018	Specialty Care Transformation in the Urban Safety Net: Frontline perceptions of eConsult Implementation	Milton W. Hamolsky Jr. Award Finalist, SGIM Annual Conference, Denver, CO
2019	Appointment Timing and Opioid Prescribing	Best Poster Award, Improving Safety, Quality and Value Theme, AcademyHealth Annual Research Meeting, Boston, MA

2019	An Audit Survey of Access to Office-Based Buprenorphine Treatment in States with High Rates of Opioid-Related Mortality	Winner of Best Abstract for Behavioral Health Theme, AcademyHealth Annual Research Meeting, Washington, DC
2020	Association between Telepsychiatry Capability and Treatment of Patients with Mental Illness in the Emergency Department	Best Poster Award, Behavioral Health Theme, AcademyHealth Annual Research Meeting, Boston, MA

**Expert Witness Reports and Testimony**

State of Washington vs. Purdue Pharma L.P. et al; 17-2-25505-0 SEA, Filed September 28, 2017

*Retained on behalf of the State of Washington as an expert on the relationship between opioid prescribing and clinical outcomes.*

Barry Staubus et al. vs. Purdue Pharma L.P. et al; E2020-00757-COA-R10-CV, Filed July 2, 2020

*Retained on behalf of a consortium of cities and counties in northeastern Tennessee (Barry Staubus, District Attorney General for Sullivan County in TN) as an expert on the relationship between opioid prescribing and clinical outcomes.*

Retained as an expert in additional 3 cases for state and county governments against opioid manufacturers that are not yet able to be disclosed.

## CURRICULUM VITAE

**DAVID W. DOWDY, MD, PhD, ScM**

### PROFESSIONAL DATA

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Baltimore, MD 21205  
Phone: 410-614-5022 (office), 410-522-9800 (clinic)  
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Twitter: @davidwdowdy

### EDUCATION AND TRAINING

PhD/2008 Johns Hopkins Bloomberg School of Public Health, Epidemiology  
MD/2008 Johns Hopkins School of Medicine  
ScM/2002 Johns Hopkins Bloomberg School of Public Health, Epidemiology  
BS/1999 Duke University, Chemistry & Biology

#### *Postdoctoral Training*

2008 – 2011 Internship & Residency, Internal Medicine  
University of California, San Francisco

#### *Other Relevant Trainings*

2011 – pres. Maryland medical license D71726  
2011 – 2021 Certified by the American Board of Internal Medicine  
2009 – 2011 California medical license A109925

### PROFESSIONAL EXPERIENCE

#### *Johns Hopkins University*

Associate Professor, Epidemiology & International Health, Johns Hopkins  
Bloomberg School of Public Health, 2015 – present

Associate Professor (joint), Medicine (General Internal Medicine), Johns Hopkins  
School of Medicine, 2015 – present

B. Frank and Kathleen Polk Assistant Professor, Epidemiology, Johns Hopkins Bloomberg School of Public Health, 2012 – 2015

Assistant Professor, Epidemiology, Johns Hopkins Bloomberg School of Public Health, 2011 – 2012

***Other non-JHU Professional Experience***

Fixed Term Graduate Faculty, Health Behavior, University of North Carolina (Chapel Hill), 2018 – present

Physician, East Baltimore Medical Center, Baltimore Medical System, 2020 – present

Senior Advisor, McKinsey & Company, 2020 – present

Legal Advisor, various firms (e.g., Keating Muething & Klekamp; Susman Godfrey LLP; Motley Rice), 2019 – present

Scientific Consultant, various organizations (e.g., World Health Organization, Clinton Health Access Initiative, Stop TB Partnership, BD Diagnostics), 2014 – present

Physician, East Baltimore Medical Center, Johns Hopkins Community Physicians, 2011 – 2020

Christine Mirzayan Intern, National Academy of Medicine, 2002

Casual Research Assistant, Harvard School of Public Health, 2001

Personal Assistance Liaison, Belmont Village Assisted Living, 1999 – 2000

**PROFESSIONAL ACTIVITIES**

*Society Membership and Leadership*

2017 – pres. Lead Investigator, JHSPH TB Modeling and Translational Epidemiology Group

2018 – pres. Core Faculty, Uganda TB Implementation Research Consortium

2018 – pres. Co-Director, Inter-CFAR Working Group on TB and HIV

2016 – pres. Director and Annual Meeting Organizer, TB Modeling Research Group, TB Modeling and Analysis Consortium (Bill & Melinda



Gates Foundation)

- 2012 – pres. Steering Committee, TB Modeling and Analysis Consortium
- 2017 – 2020 Chair, Scientific Sessions & Symposia (~10), Union World Conference on Lung Health
- 2017 – pres. National Tuberculosis Controllers' Association, member
- 2010 – pres. Intl. Union Against Tuberculosis and Lung Disease, member
- 2020 Co-Director, Satellite Session, AIDS 2020 Conference
- 2018 Organizing Committee, National Tuberculosis Conference
- 2017 Organizing Committee, NIH Workshop on Halting Tuberculosis Transmission (Cape Town, South Africa)
- 2017 Organizing Committee, NIAID/Harvard Workshop on TB Infection: Building a Framework for Eradication (Dubai, UAE)
- 2016 – 2017 Steering Committee, Social Protection Action Research and Knowledge Sharing (SPARKS) Network, World Health Org.
- 2016 Organizing Committee, NIH Workshop on Halting Tuberculosis Transmission (Bethesda, MD)
- 2014 – 2015 Committee on Global Plan Development, New TB Diagnostics Working Group of the Stop TB Partnership
- 2012 – 2015 International AIDS Society, member
- 2012 – 2015 Chair, Modeling Subgroup, TB Diagnostics Forum/Critical Path to TB Drug Regimens DST, National Institute of Allergy and Infectious Diseases (NIAID)/Bill & Melinda Gates Foundation
- 2014 Workshop Organizer, Modeling to Support Decision-Making in TB Diagnostics, KNCV Tuberculosis Foundation (The Hague, The Netherlands)
- 2013 Conference Organizer, Modeling TB Diagnostics, Bill & Melinda Gates Foundation (Amsterdam, The Netherlands)
- 2012 – 2013 Chair, Modeling Core, TB Clinical Diagnostics Research Consortium, National Institutes of Health

*Participation on Advisory Panels*

- 2019 – pres. Scientific Advisory Committee, CAP-TB project, European and Developing Countries Clinical Trials Partnership
- 2019 Guideline Development Group, World Health Organization, Urine LAM for Diagnosis of Tuberculosis
- 2019 Guideline Development Group, World Health Organization, Update of Guidelines on Drug-Resistant Tuberculosis
- 2019 Revision of the Global Plan to End TB, Stop TB Partnership
- 2018 – 2019 Chair, Data Safety and Monitoring Board, PROSPECT study Wellcome Trust/UK Medical Research Council
- 2014 – 2019 Scientific Advisory Board, APOPO Diagnostics
- 2018 Health Technology Assessment: Market Size of Universal TB Regimens, Office of Health Economics (London, UK)
- 2015 California Tuberculosis Elimination Task Force
- 2013 Tuberculosis Epidemiologic Studies Consortium (TBESC), Health economics advisory panel
- 2013 TB Technical Advisory Group (TAG), Bill & Melinda Gates Foundation

**EDITORIAL AND OTHER PEER REVIEW ACTIVITIES**

*Journal Peer Review Activities*

Reviewed articles for >50 journals (approx. 25 reviews/year), including *The New England Journal of Medicine*, *Science*, and *The Lancet* (multiple reviews each)

*Journal or Other Editorial Board Membership*

- 2021 – pres. Associate Editor, *Journal of the International AIDS Society*
- 2018 – pres. Associate Editor, *Intl Journal of Tuberculosis & Lung Disease*

- 2019 – 2020 Guest Editor, *Journal of the International AIDS Society*  
Supplement on modeling of integrated HIV care
- 2014 – 2020 Section Editor, *PLOS ONE*
- 2011 – 2014 Academic Editor, *PLOS ONE*
- 2005 – 2007 Student Editorial Assistant, *Medicine (Baltimore)*

*Proposal Reviews*

- 2017 – pres. NIH Study Section Standing Member, Microbiology and Infectious  
Diseases B
- 2013 – 2016 Ad-hoc NIH Study Section Participant (9 sections)
- 2013 – 2020 Center for AIDS Research, Johns Hopkins University
- 2015 – 2018 TB Modeling and Analysis Consortium
- 2014, 2015 Medical Research Council, UK
- 2013 Medical Research Council, South Africa  
South African Universities Flagship Projects  
National Research Foundation, South Africa  
Wellcome Trust, UK

**HONORS AND AWARDS**

*Honors*

- 2012 B. Frank and Kathleen Polk Assistant Professorship  
Department of Epidemiology
- 2008 Alpha Omega Alpha Honor Society  
Johns Hopkins University School of Medicine
- 2002 Delta Omega Honor Society  
Johns Hopkins Bloomberg School of Public Health
- 1999 Phi Beta Kappa Honor Society, Duke University
- 1996 Duke University Alumni Endowed Scholarship

*Awards*

- 2018      Advising, Mentoring, and Teaching Recognition Award (AMTRA)  
Johns Hopkins Bloomberg School of Public Health
- 2016      Excellence in Mentorship Award (Scholarly Concentrations)  
Johns Hopkins University School of Medicine
- 2014      Golden Apple Teaching Award, Large Class  
Johns Hopkins Bloomberg School of Public Health
- 2013      Advising, Mentoring, and Teaching Recognition Award (AMTRA)  
Johns Hopkins Bloomberg School of Public Health
- 2012      Young Investigator Award  
International Union Against TB and Lung Disease
- 2011      Tom Evans Teaching Award  
Internal Medicine Residency Program, UCSF
- 2010      Diane Becker Award in Clinical Epidemiology and Prevention  
Johns Hopkins GIM Housestaff Research Award
- 2010      Floyd Rector Clinical Science Research Award  
Internal Medicine Residency Program, UCSF
- 2010      Teaching Excellence Award for Cherished Housestaff (TEACH)  
Class of 2010, UCSF School of Medicine
- 2009      Julius Krevans Award for Outstanding Housestaff Service  
Department of Medicine, San Francisco General Hospital
- 2008      Warfield T. Longcope Prize in Clinical Medicine  
Johns Hopkins University School of Medicine
- 2008      David E. Rogers Award for Professionalism, Ethics, & Community  
Johns Hopkins University School of Medicine
- 2008      Arthur M. Dannenberg, Jr. Award for Tuberculosis Research  
Johns Hopkins Center for Tuberculosis Research
- 2005      Charlotte Silverman Award, Department of Epidemiology  
Johns Hopkins Bloomberg School of Public Health

2004	Robert Dyar Award, Department of Epidemiology Johns Hopkins Bloomberg School of Public Health
2002	Teaching Assistant Recognition Award Johns Hopkins Bloomberg School of Public Health
2002	Student Support Fund Award, Department of Epidemiology Johns Hopkins Bloomberg School of Public Health
2001	Marilyn Menkes Book Award, Department of Epidemiology Johns Hopkins Bloomberg School of Public Health
1999	Merck Index Award, Chemistry Department, Duke University

## PUBLICATIONS

(\* indicates a mentored student or post-doctoral fellow)

### *Journal Articles (peer reviewed)*

1. Kitonsa PJ\*, Nalutaaya A, Mukiibi J, Nakasolya O, Isooba D, Kamoga C, Baik Y\*, Robsky K\*, **Dowdy DW**, Katamba A, Kendall EA. Evaluation of underweight status may improve identification of the highest-risk patients during outpatient evaluation for pulmonary tuberculosis. PLoS One. 2020 Dec 11;15(12):e0243542.
2. Kendall EA, Kitonsa PJ\*, Nalutaaya A, Kamoga CE, Mukiibi J, Nakasolya O, Isooba D, Baik Y\*, Robsky KO\*, Kato-Maeda M, Cattamanchi A, Katamba A, **Dowdy DW**. The spectrum of tuberculosis disease in an urban Ugandan community and its health facilities. Clin Infect Dis. 2020 Dec 6:ciaa1824. E-pub ahead of print.
3. Crowder R, Kityamuwesi A, ..., **Dowdy D**, Stavia T, Cattamanchi A, Katamba A. Study protocol and implementation details for a pragmatic, stepped-wedge cluster randomised trial of a digital adherence technology to facilitate tuberculosis treatment completion. BMJ Open. 2020 Nov 27;10(11):e039895.
4. Kendall EA, Shrestha S, **Dowdy DW**. The Epidemiological Importance of Subclinical Tuberculosis: A Critical Re-Appraisal. Am J Respir Crit Care Med. 2020 Nov 16. E-pub ahead of print.
5. Kadota JL, Reza TF, Nalugwa T, Kityamuwesi A, Nanyunja G, Kiwanuka N, Shete P, Davis JL, **Dowdy D**, Turyahabwe S, Katamba A, Cattamanchi A. Impact of shelter-in-place on TB case notifications and mortality during the COVID-19 pandemic. Int J Tuberc Lung Dis. 2020 Nov 1;24(11):1212-1214.

6. Jo Y\*, Gomes I\*, Shin H\*, Tucker A\*, Ngwira LG\*, Chaisson RE, Corbett EL, **Dowdy DW**. Health-related quality of life of inpatients and outpatients with TB in rural Malawi. *Int J Tuberc Lung Dis*. 2020 Nov 1;24(11):1165-1171.
7. Baik Y\*, Rickman HM\*, Hanrahan CF, Mmolawa L, Kitonsa PJ, Sewelana T, Nalutaaya A, Kendall EA, Lebina L, Martinson N, Katamba A, **Dowdy DW**. A clinical score for identifying active tuberculosis while awaiting microbiological results: Development and validation of a multivariable prediction model in sub-Saharan Africa. *PLoS Med*. 2020 Nov 10;17(11):e1003420.
8. Gomes I\*, Reja M, Shrestha S, Pennington J, Jo Y\*, Baik Y\*, Islam S, Khan AH, Faisel AJ, Cordon O, Roy T, Suarez P, Hussain H, **Dowdy D**. Incorporating patient reporting patterns to evaluate spatially targeted TB interventions. *Ann Epidemiol*. 2020 Nov 6;54:7-10.
9. Matsushita K, Ding N, Kou M, Hu X, Chen M, Gao Y, Honda Y, Zhao D, **Dowdy D**, Mok Y, Ishigami J, Appel LJ. The Relationship of COVID-19 Severity with Cardiovascular Disease and Its Traditional Risk Factors: A Systematic Review and Meta-Analysis. *Glob Heart*. 2020 Sep 22;15(1):64.
10. Ballreich J, Mansour O, Hu E, Chingcuanco F, Pollack HA, **Dowdy DW**, Alexander GC. Modeling Mitigation Strategies to Reduce Opioid-Related Morbidity and Mortality in the US. *JAMA Netw Open*. 2020 Nov 2;3(11):e2023677.
11. Cilloni L, Fu H, Vesga JF, **Dowdy D**, Pretorius C, Ahmedov S, Nair SA, Mosneaga A, Masini E, Sahu S, Arinaminpathy N. The potential impact of the COVID-19 pandemic on the tuberculosis epidemic a modelling analysis. *EClinicalMedicine*. 2020 Oct 24;28:100603.
12. Shin H\*, Jo Y\*, Chaisson RE, Turner K, Churchyard G, **Dowdy DW**. Cost-effectiveness of a 12 country-intervention to scale up short course TB preventive therapy among people living with HIV. *J Int AIDS Soc*. 2020 Oct;23(10):e25629.
13. Ferguson O\*, Jo Y\*, Pennington J, Johnson K\*, Chaisson RE, Churchyard G, **Dowdy D**. Cost-effectiveness of one month of daily isoniazid and rifapentine versus three months of weekly isoniazid and rifapentine for prevention of tuberculosis among people receiving antiretroviral therapy in Uganda. *J Int AIDS Soc*. 2020 Oct;23(10):e25623.
14. Hershov RB, Reyes HLM, Ha TV, Chander G, Mai NVT, Sripaipan T, Frangakis C, **Dowdy DW**, Latkin C, Hutton HE, Pettifor A, Maman S, Go VF. Alcohol use, depressive symptoms, and intimate partner violence perpetration: A longitudinal analysis among men with HIV in northern Vietnam. *PLoS One*. 2020 Oct 16;15(10):e0240674.

15. Albaugh NW\*, Nonyane BAS, Mmolawa L, Siwelana T, Lebina L, **Dowdy DW**, Martinson N, Hanrahan CF. Brief Report: Proportion and Predictors of Adult TB Contacts Accepting HIV Testing During an Active TB Case Finding Intervention in South Africa. *J Acquir Immune Defic Syndr*. 2020 Dec 15;85(5):525-529.
16. Lancaster KE, Hetrick A, Sripaipan T, Ha TV, Hutton HE, Chander G, Latkin CA, **Dowdy D**, Frangakis C, Quynh BX, Go VF. Alcohol abstinence stigma and alcohol use among HIV patients in Thai Nguyen, Vietnam. *PLoS One*. 2020 Sep 30;15(9):e0239330.
17. Sohn H, Tucker A\*, Ferguson O\*, Gomes I\*, **Dowdy D**. Costing the implementation of public health interventions in resource-limited settings: a conceptual framework. *Implement Sci*. 2020 Sep 29;15(1):86.
18. Go VF, Hutton HE, Ha TV, Chander G, Latkin CA, Mai NVT, Quynh BX, Nguyen V, Sripaipan T, Lancaster KE, Blackburn N, Hershow RB, **Dowdy DW**, Frangakis C. Effect of 2 Integrated Interventions on Alcohol Abstinence and Viral Suppression Among Vietnamese Adults With Hazardous Alcohol Use and HIV: A Randomized Clinical Trial. *JAMA Netw Open*. 2020 Sep 1;3(9):e2017115.
19. Shrestha S, Parriott A, Menzies NA, Shete PB, Hill AN, Marks SM, **Dowdy DW**. Estimated Population-Level Impact of Using a Six-Week Regimen of Daily Rifapentine to Treat Latent Tuberculosis Infection in the United States. *Ann Am Thorac Soc*. 2020 Dec;17(12):1639-1642.
20. Blackburn NA\*, Go VF, Bui Q, Hutton H, Tampi RP, Sripaipan T, Ha TV, Latkin C, Golden S, Golin C, Chander G, Frangakis C, Gottfredson N, **Dowdy DW**. Implementation of two alcohol reduction interventions among persons with hazardous alcohol use who are living with HIV in Thai Nguyen, Vietnam: a micro-costing analysis. *Glob Health Action*. 2020 Dec 31;13(1):1814035.
21. Nguyen MX, **Dowdy D**, Latkin CA, Hutton HE, Chander G, Frangakis C, Lancaster KE, Sripaipan T, Bui QX, Tran HV, Go VF. Social support modifies the association between hazardous drinking and depression symptoms among ART clients in Vietnam. *Drug Alcohol Depend*. 2020 Oct 1;215:108249.
22. Kadota JL, Musinguzi A, Nabunje J, ..., **Dowdy D**, Semitala FC, Cattamanichi A. Protocol for the 3HP Options Trial: a hybrid type 3 implementation-effectiveness randomized trial of delivery strategies for short-course tuberculosis preventive therapy among people living with HIV in Uganda. *Implement Sci*. 2020 Aug 12;15(1):65.
23. Nguyen MXB, Chu AV, Powell BJ, Tran HV, Nguyen LH, Dao ATM, Pham MD, Vo SH, Bui NH, **Dowdy DW**, Latkin CA, Lancaster KE, Pence BW, Sripaipan T, Hoffman I, Miller WC, Go VF. Comparing a standard and tailored approach to

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2. **Dowdy DW**. The urgent need to improve clinical practice guidelines for pediatric tuberculosis. Int J Tuberc Lung Dis. 2020 Mar 1;24(3):264.
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19. Pai M, **Dowdy D**. Tuberculosis: progress and challenges in product development and delivery. *Lancet Respir Med*. 2014 Jan;2(1):25-7.
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### *Chapters*

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### **PRACTICE ACTIVITIES** (starting 2015)

#### *Testimony*

- |      |  |
|------|--|
| 2017 | United States Senate<br>Briefing on Drug-Resistant Tuberculosis as a Global Health Threat                  |
| 2017 | United States Senate<br>Participation in local briefings to staffers of Sens. Ben Cardin and Patrick Leahy |

#### *Presentations to Policymakers and Other Stakeholders*

- |      |  |
|------|--|
| 2020 | National Tuberculosis and Leprosy Program, Uganda<br>Uganda TB Research Day presentation                         |
| 2020 | National Vaccine Advisory Committee<br>The role of vaccines in generating herd immunity to COVID-19              |
| 2020 | U.S. Centers for Disease Control and Prevention (CDC)<br>Modeling tuberculosis outbreaks and outbreak prevention |
| 2019 | TB Controllers of Michigan & North Dakota<br>Modeling to support state-level TB decision-making                  |

- 2019 U.S. Centers for Disease Control and Prevention (CDC)  
Five years of TB NEEMA: accomplishments and lessons learned  
Modeling the cost-effectiveness of targeted testing and treatment  
interventions to eliminate tuberculosis in four states
- 2019 National Tuberculosis Program, Bangladesh  
Mathematical modeling of TB hotspots, transmission, and targeted  
interventions in Dhaka South City Corporation (DSCC)
- 2018 – 2019 World Health Organization  
Indeterminate range to improve early infant diagnosis of HIV
- 2018 Bill and Melinda Gates Foundation  
Global Fund to fight AIDS, Tuberculosis, and Malaria  
World Health Organization  
Developing guidelines for transmission models of tuberculosis
- 2018 Global Fund to fight AIDS, Tuberculosis, and Malaria  
Update on modeling of tuberculosis case-finding in Karachi
- 2018 TB-REACH  
Webinar on methods for modeling active TB case finding
- 2017 Zero TB Cities Initiative  
Presentations to Dhaka, Bangladesh, and Karachi, Pakistan
- 2017 Bill and Melinda Gates Foundation  
Models to project the global future of multidrug-resistant TB
- 2017 Foundation for Innovative New Diagnostics  
Briefings on role of Xpert Ultra and models of subclinical TB  
Diagnostics
- 2017 TB Controllers of Maricopa County and Saipan  
Discussions on role of modeling for local TB control
- 2016 – 2017 World Health Organization  
Target Regimen Profiles for New TB Drugs
- 2016 World Health Organization  
Preparation for Expert Meeting on Xpert Ultra
- 2016 – 2017 Baltimore City Health Department  
Modeling of Pre-Exposure Prophylaxis for HIV

- 2016 – 2017 TB Controllers of New York, California, Florida and Texas  
Modeling TB Elimination in Four States (multiple meetings)
- 2015 Zero TB Cities Initiative  
Meeting on Zero TB Cities
- 2015 United States Senate  
Hearing on Multidrug-Resistant Tuberculosis
- 2015 World Health Organization  
Meeting on Target Regimen Profiles for Tuberculosis
- 2015 United States Centers for Disease Control and Prevention  
Brown Bag Lunch Seminar, Modeling Impact of TB Diagnostics
- 2015 California TB Elimination Task Force  
Participant in International Expert Group Meeting
- Consultations or Collaborations with Policymakers, Community Groups, and Other Stakeholders*
- 2020 Baltimore County, Maryland  
Understanding the Percent Positive and COVID-19 Transmission
- 2020 McKinsey & Company  
Modeling the Impact of COVID-19 at the Local Level
- 2020 Bill and Melinda Gates Foundation  
Understanding the Role of Rapid Diagnostic Tests for COVID-19  
Setting BMGF Funding Priorities for COVID-19 Diagnostics
- 2020 Foundation for Innovative New Diagnostics  
Modeling the Impact of Rapid Diagnostic Tests for COVID-19
- 2020 IQVIA  
Modeling the impact of COVID-19 on pharmaceutical developers
- 2019 – 2020 State of Ohio  
Modeling the “Tipping Point” of the Opioid Epidemic in Ohio
- 2019 – 2020 Clinton Health Access Initiative  
Modeling Interventions to Achieve a Step Change in TB Incidence
- 2019 Bill and Melinda Gates Foundation  
TB Diagnostics and Therapeutics Strategies

- 2019 City of Baltimore  
Modeling the Opioid Epidemic in Baltimore
- 2018 – 2019 National Institutes of Health/Fogarty International Center  
Modeling the Integration of HIV and Non-Communicable Diseases
- 2018 White Ox  
Network Analysis of the TB Modeling Community
- 2018 Center for Strategic and International Studies  
Lancet Commission Roundtable on HIV
- 2018 Bill and Melinda Gates Foundation  
Understanding Transmission of Subclinical Tuberculosis
- 2018 Global Health Cost Consortium  
Refining unit cost estimates for tuberculosis
- 2017 – 2019 Bill and Melinda Gates Foundation  
Projecting the Future of the MDR-TB Epidemic

*Media Dissemination*

*Traditional Media (e.g., newspaper, broadcast networks, magazine, etc.)*

- 2020 COVID-19 and Herd Immunity  
Venues include: The New York Times, Time Magazine, CNN, NBC News, The Wall Street Journal, Cheddar TV, WFTV Orlando, Retro Report, KCBS San Francisco, Exame Brazil, NTV Russia, Live Science, Global News Canada
- 2020 Projections of the COVID-19 Epidemic  
Venues include: NBC News, Deseret News, National Public Radio (NPR), Fox 10 News Phoenix, Bloomberg News, The Weather Channel, Cleveland.com, Today.com
- 2020 Diagnostic Testing and Treatment for COVID-19  
Venues include: The New York Times, The Washington Post, WUSA9, The Gothamist/WNYC, Esquire
- 2020 Impact of COVID-19 on the Presidential Debates  
Venues include: The Hill, WUSA9
- 2020 Understanding the Percent Positive for COVID-19  
Venues include: Belleville News-Democrat, Roanoke Times, Lead Stories

- 2020            Impact of COVID-19 on Indoor Dining  
                  Venues include: Today.com, Baltimore Business Journal,  
                  Washington City Paper
- 2020            Impact of Holiday Travel on COVID-19  
                  Venues include: The Washington Post, The Wall Street Journal,  
                  Texas Public Radio, Today.com, KPIX San Francisco
- 2020            Understanding Vaccines for COVID-19  
                  Venues include: The Wall Street Journal, WUSA9, WPFW, NTV  
                  Russia, Canadian Broadcasting Corporation, Today.com,
- 2020            Summary: Six Months of COVID-19  
                  BBC World Report
- 2020            What Infectious Disease Experts Clean Every Day  
                  Huffington Post, CHQR Calgary
- 2020            Proper Mask-Wearing Technique  
                  WJZ Baltimore
- 2020            Supply Chains & Ventilators for COVID-19  
                  The New Yorker
- 2020            Alcohol-Based Hand Sanitizers for COVID-19  
                  The New York Post
- 2020            Uncertainty in Epidemic Forecasts  
                  Physics World
- 2018            Global Spread of Tuberculosis  
                  National Public Radio (NPR)
- 2015            Multidrug-Resistant Tuberculosis  
                  Huffington Post

*Social Media, Podcasts, Blog Posts, Videos*

- 2020 –            Twitter (500 tweets, 1745 followers as of Jan 1, 2021)
- 2020            The Megyn Kelly Show  
                  COVID Truth on Lockdowns, Vaccines, and Schools, with the  
                  Great Barrington Doctors  
                  Jay Bhattacharya, Martin Kulldorff, David Dowdy

- 2020 Johns Hopkins Coronavirus Resource Center  
The Path to Reversing Troubling Trends (video webinar)  
Josh Sharfstein, Caitlin Rivers, Amber D'Souza, David Dowdy
- 2020 Johns Hopkins Coronavirus Resource Center  
COVID-19 Milestone: A Closer Look at the Pfizer Vaccine News  
Katie Pearce, David Dowdy, William Moss
- 2020 Locking Down or Opening Up?  
A Debate on the Best Path Through the Pandemic.  
Johns Hopkins Interdisciplinary Zoom Webinar Series  
Jay Bhattacharya, Stefan Baral, David Dowdy, Colleen Hanrahan  
(later covered in *BMJ* and other scientific publications)
- 2020 Public Health on Call Podcast  
Debunking the 'Herd Immunity' Strategy  
Gypsyamber D'Souza, David Dowdy, Joshua Sharfstein
- 2020 JHSPH COVID-19 Expert Insights  
COVID-19 and the Long Road to Herd Immunity  
Gypsyamber D'Souza and David Dowdy
- 2020 JHSPH COVID-19 Expert Insights  
What is Herd Immunity and How Can we Achieve it with COVID-19?"  
Gypsyamber D'Souza and David Dowdy
- 2020 Johns Hopkins Coronavirus Resource Center  
Economists and Epidemiologists: Not at Odds, but In Agreement:  
We Need a Broad-Based COVID-19 Testing Strategy  
Robert Barbera, David Dowdy, and Nicholas Papageorge
- 2020 Johns Hopkins Coronavirus Resource Center  
Early Herd Immunity against COVID-19: A Dangerous  
Misconception  
David Dowdy and Gypsyamber D'Souza
- 2020 Johns Hopkins Coronavirus Resource Center  
COVID-19 World Map: Critical Trends  
Consultation on key data visualizations
- 2020 Twitter/Instagram/Facebook  
Social Distancing Can Control the Spread of Coronavirus  
Specialty production with JHSPH Communications and Mark  
Leibowitz Pictures

2020 Debby Ryan  
How Big is the Coronavirus Epidemic?  
Specialty celebrity production with JHSPH Communications and  
Mark Leibowitz Pictures

2020 Winnie Harlow  
Social Distancing and Coronavirus  
Specialty celebrity production with JHSPH Communications and  
Mark Leibowitz Pictures

*Software Development*

2015 – 2020 Open-source software packages developed for mathematical  
models of TB

## PART II

### TEACHING

#### *Academic Advisees*

##### Postdoctoral Fellows

Katherine Robsky, PhD, 2020 – present  
Yeonsoo Baik, PhD, 2019 – present  
Hye Jeong (Julia) Shin, PhD, 2019 – 2020  
Youngji Jo, PhD, 2018 – 2020  
Suzanne Simkovich, MD, 2017 – 2020 (Pulm/CCM, co-primary advisor)  
Hojoon Sohn, PhD 2016 – 2019  
Phillip Salvatore, PhD, 2018 – 2019  
Sarah Cherng, PhD, 2017 – 2018  
Emily Kendall, MD PhD, 2014 – 2018 (Infectious Diseases)  
Tina Gupta, MD, 2016 – 2018 (General Internal Medicine, co-primary advisor)  
Anthony Todd Fojo, 2015 – 2018 (General Internal Medicine, co-primary advisor)  
Mahsa Oroojeni, PhD, 2017 (co-primary advisor)  
Parastu Kasaie, PhD, 2014 – 2016  
Alice Zwerling, PhD, 2013 – 2016  
Andrew Azman, PhD, 2014 – 2015 (co-primary advisor)  
Sourya Shrestha, PhD, 2013 – 2015  
Colleen Hanrahan, PhD, 2013 – 2015

##### PhD Students

Melissa Schnure, PhD candidate, 2020 – present  
Natalie Blackburn, PhD, 2018 – 2020 (UNC; co-primary advisor)  
    Thesis: Costs and cost-effectiveness of behavioral interventions to reduce risky alcohol use among people living with HIV in Vietnam  
Katherine Robsky, PhD, 2017 – 2020  
    Thesis: Spatiotemporal Patterns of Tuberculosis in Urban Sub-Saharan Africa  
Kate Shearer, PhD, 2015 – 2019  
    Thesis: The impact of guideline changes on timing of HIV diagnosis, ART uptake, and IPT provision among people living with HIV in South Africa  
Matthew Murrill, MD PhD, 2014 – 2019  
    Thesis: Understanding loss to follow-up from and quality of life during drug-resistant tuberculosis treatment in Pune, India  
Emily Kendall, MD PhD, 2014 – 2018 (GTPCI)  
    Thesis: Mathematical modeling to guide programmatic decisions about the use of new tuberculosis drugs, regimens, and diagnostics  
Phillip Salvatore, PhD, 2016 – 2018 (MMI Department)  
    Thesis: Quantitative assessment of the drug resistance patterns, natural history, and transmission dynamics of tuberculosis  
Hae-Young Kim, PhD, 2013 – 2017



- Thesis: Implications for the uptake of HIV and TB preventive therapies among HIV-positive pregnant women in South Africa  
Mariam Fofana, MD PhD, 2012 – 2017  
Thesis: Epidemiologic impact of treatment interventions for tuberculosis control  
Kristen Little, PhD, 2013 – 2015  
Thesis: Evaluating the impact of strategies for tuberculosis prevention and control in high-burden, low-resource settings: data for evidence-based decision-making in local contexts  
Liza Bronner Murrison, PhD, 2012 – 2015  
Thesis: An evaluation of private sector pathways to diagnosis of tuberculosis in Chennai, India

#### ScM/MHS Students

- Arcadia Trvalik, MHS candidate, 2020 – present  
Melissa Schnure, ScM, 2019 – 2020  
Thesis: Assessing the impact of targeted screening and treatment of diabetes and hypertension among adults living with HIV in Nairobi  
Shalom Patole, MD, ScM, 2019 – 2020  
Thesis: Contact tracing for tuberculosis in South Africa: a modeling study  
Bailey Evenson, MHS, 2018 – 2019  
Thesis: Climate change and infectious disease in Baltimore City  
Rienna Russo, BA/MHS, 2017 – 2018  
Thesis: Identifying key components of long-acting preventive therapy and the potential impact on tuberculosis incidence in South Africa: A model-based study  
Norberth (Bud) Stracker, ScM, 2016 – 2018  
Thesis: Risk factors of catastrophic costs of tuberculosis illness and treatment in rural South Africa  
Lucas Buyon, MHS, 2017  
Thesis: Targeted HIV STI screening strategies amongst MSM in Baltimore and the impact on the HIV epidemic: Using agent based models to study STI-HIV co-infection dynamics  
Keya Joshi, MHS, 2016 – 2017 (co-primary advisor)  
Thesis: Effective MDR-TB regimen roll-out: population level impact of novel bedaquiline containing regimens for drug resistant tuberculosis in high burden settings  
Allison Perry, BA/MHS, 2016 – 2017  
Thesis: What will it take to reduce HIV incidence in the United States: A mathematical modeling analysis  
Alison Simms, BA/MHS, 2014 – 2015  
Thesis: Review of the literature on diagnostic testing for latent tuberculosis infection  
Anwasha Majumder, MHS, 2013 – 2015  
Thesis: Quantifying the indirect effects of *Haemophilus influenzae* type B vaccination in children under 5 years old

Mark Moses, MHS, 2013 – 2015

Thesis: Serial testing for latent tuberculosis using QuantiFERON Gold In-Tube: A Markov model

MPH Students

Jennifer Payne, BS, 2018 – 2019

Hannah Rickman, BS, 2018 – 2019

Nicole Lightman, RN, 2017 – 2018

Robert Moran, MD, 2016 – 2017

Hikari Yoshii, MD, 2016 – 2017

Prabha Chandrasekaran, MD PhD, 2015 – 2017

Ashish Yadav, MD, 2013 – 2014

Michael Burkitt, MD, 2012 – 2014

Fauziah Putri, MD, 2012 – 2013

Sara Phillips, RCNP, 2012 – 2013

NIH Career Development Award (K01/K08/K23) Advisees

Colleen Hanrahan, PhD, 2021 – present (K01, primary mentor)

Trishul Siddharthan, MD, 2019 – present (K23, co-mentor)

Anthony Todd Fojo, MD 2018 – present (K08, primary mentor)

Parastu Kasaie, PhD, 2018 – present (K01, primary mentor)

Jennifer Ross, MD, 2018 – present (K01, UW, co-mentor)

Emily Kendall, MD PhD, 2017 – present (K08, primary mentor)

Christina Yoon, MD, 2014 – 2020 (K23, UCSF, co-mentor)

NIH F32 Postdoctoral Advisees

Katherine Robsky, PhD, 2021 – present (primary mentor)

Suzanne Simkovich, MD, 2018 – 2020 (co-primary mentor)

NIH F31 Predoctoral Advisees

Hyejeong Hong, RN PhD, 2017 – 2018 (co-mentor)

*Capstone Advisees*

Rachel Dwilow, MD, 2019 – present

Chaoran Dong, BS, 2019 – present

Ghassan Ilaiwy, MD, 2019 – 2020

Chen Liu, BS, 2020

Alexandra Zimmer, BS, 2019 – 2020

Rabia Jalalzai, MD, 2019 – 2020

Molly Petersen, MHS, 2018 – 2019

Omar Mansour, MHS, 2016

Michael King, DVM, 2013 – 2014

Taruja Karmarkar, MHS, 2012 – 2013

Di (Sandy) Sun, MD MPH, 2011 – 2012

Jonathan Owens, MHS, 2011 – 2012

*Research Project Advisees (Scholarly Concentrations, MPH Practicum, etc.)*

Isabella Gomes, BS, 2018 – 2019  
Constance Lau, BS, 2018 – 2019  
Sam Erlinger, BS, 2018 – 2019  
Seamus Hughes, BS, 2017 – 2018  
Karl Johnson, BS, 2016 – 2018  
Lucky-Gift Ngwira, PhD, 2015 – 2018  
Elizabeth Uhlig, MD, 2016 – 2017  
Esther Hsiang, MD, 2015 – 2016  
Matthew Murray, MD, 2015 – 2016  
Patricia Haguma, MD, 2015 – 2016  
Maitreyi Sahu, MHS, 2012 – 2013  
Amanda Sun, MD, 2012 – 2013  
Matthew Molisani, BS, 2012 – 2013

*Other Advisees*

Youngji Jo, PhD, 2020 – present (K01 applicant, Boston University, co-mentor)  
Simon Mutembo, MD, 2020 – present (Assistant Scientist, Dept. of International Health, faculty advisor)  
Carrie Lyons, BS, 2020 – present (F32 applicant, JHSPH, co-mentor)  
Lena Mathews, MD, 2020 – present (K01 applicant, Johns Hopkins School of Medicine, co-mentor)  
Katherine McNabb, RN, 2020 – present (F32 applicant, Johns Hopkins School of Nursing, co-mentor)  
Pranay Sinha, PhD, 2020 – present (K01 applicant, Boston University, co-mentor)  
Junichi Ishigami, MD, 2018 – present (Assistant Scientist and K01 applicant, Dept of Epidemiology, co-primary mentor)  
Christina Schumacher, PhD, 2019 – 2020 (Assistant Scientist, Dept. of Pediatrics, K01 applicant, co-mentor)  
Marva Siefert, PhD, 2019 – 2020 (K01 applicant, University of California, San Diego, co-mentor)  
Joseph Muller, MD, 2015 – 2018 (Urban Health residency coach)  
Justin Berk, MD, 2015 – 2018 (Urban Health residency coach)  
Olive Tang, MD PhD, 2016 – 2018 (MD/PhD program advisor)  
Matthew Murrill, MD PhD, 2012 – 2018 (MD/PhD program advisor)  
Mariam Fofana, MD PhD, 2016 – 2017 (MD/PhD program advisor)  
Katie Washington Cole, MD PhD, 2012 – 2017 (MD/PhD program advisor)  
Jose Flores, MD PhD, 2012 – 2016 (MD/PhD program advisor)  
Evan Russell, MD PhD, 2012 – 2015 (MD/PhD program advisor)  
Adrienne Shapiro, MD PhD, 2012 – 2012 (MD/PhD program advisor)

*Master's Thesis Reader*

Melissa Schnure, ScM, Epidemiology, 2020

Shalom Patole, ScM, Epidemiology, 2020  
Alexandra Zimmer, MHS, International Health, 2020  
Bailey Evenson, MHS, Epidemiology, 2019  
Rienna Russo, MHS, Epidemiology, 2018  
Norberth (Bud) Stracker, ScM, Epidemiology, 2018  
Lucas Buyon, ScM, Epidemiology, 2017  
Keya Joshi, MHS, Epidemiology, 2017  
Allison Perry, MHS, Epidemiology, 2017  
Maitreyi Sahu, MSPH, International Health, 2013  
Allison McFall, MHS, Epidemiology, 2012  
Katrina Mott, MHS, Epidemiology, 2012

*Department Oral Exam Participation*

Athalia Christie, 2020  
Maneet Kaur, 2019  
Pritesh Karia, 2018  
Katherine Robsky, 2018 (advisor)  
Hojoon Lee, 2017  
Cody Ramin, 2016  
Emily Knapp, 2016  
Denali Boon, 2016  
Matthew Murrill, 2016 (advisor)  
Kate Shearer, 2016 (advisor)  
Geoff Dougherty, 2016  
Chelsea Canan, 2015  
Marisa Hast, 2015  
Hae-Young Kim, 2015 (advisor)  
Shaun Truelove, 2015  
Rebecca Pierce, 2014  
Mariam Fofana, 2014 (advisor)  
Liza Bronner Murrison, 2014 (advisor)  
Lauren Kucirka, 2014  
Jose Flores, 2014  
Kristen Little, 2014 (advisor)  
Sunil Solomon, 2014  
Kari Weber, 2013  
Peter Ribeiro, 2013  
Shilpa Viswanathan, 2013  
Lisa Krain, 2012  
Tsung Yu, 2012  
Beth Linas, 2012  
Bonnie Swenor, 2012  
Heather McKay, 2012  
Jennifer Nuzzo, 2012  
Kara Rudolph, 2012

Matthew Gribble, 2011

*Preliminary Oral Exam Participation*

Forrest Jones, Dept. of Epidemiology, 2020 (alternate)  
Yasmin Ogale, Dept. of International Health, 2019 (alternate)  
Jowanna Malone, Dept. of Epidemiology, 2019 (alternate)  
Jessica Schue, Dept. of International Health, 2018 (alternate)  
Allison Oakes, Dept. of Health Policy & Management, 2018 (alternate)  
Natalie Blackburn, Dept. of Health Behavior, UNC, 2018  
Jess Wilhelm, Dept. of International Health, 2017  
Alexandra Lorentz, Dept. of Environ. Health & Eng., 2017 (alternate)  
Matt Dudley, Dept. of International Health, 2017  
Eunice Kagucia, Dept. of International Health, 2017 (alternate)  
Hyejeong Hong, School of Nursing, 2016  
Stephanie Loomis, Dept. of Epidemiology, 2016 (alternate)  
Emily Kendall, Dept. of Epidemiology/GTPCI, 2016 (advisor)  
Farida Al-Hosany, Dept. of Epidemiology, 2016 (alternate)  
Saba Rouhani, Dept. of International Health, 2016 (alternate)  
Anna Gieselmann Radin, Dept. of Epidemiology, 2016 (alternate)  
Philip Salvatore, Dept. of MMI, 2016 (alternate)  
Lauren Brown, Dept. of International Health, 2016  
Javier Bustos, Dept. of International Health, 2016 (alternate)  
Akshay Gupte, Dept. of International Health, 2016  
Amber Cox, Dept. of International Health, 2016 (alternate)  
Nicole Fusco, Dept. of Epidemiology, 2016 (alternate)  
Julie Ruel-Bergeron, Dept. of International Health, 2016 (alternate)  
Katharine Shelly, Dept. of International Health, 2015 (alternate)  
Kathryn Risher, Dept. of Epidemiology, 2015 (alternate)  
Vivek Charu, Dept. of Biostatistics, 2014  
Antonio Quispe, Dept. of International Health, 2014 (alternate)  
Trevor Cromwell, Dept. of Epidemiology, 2013 (GTPCI, alternate)  
Benjamin Althouse, Dept. of Epidemiology, 2013 (alternate)  
Jessica Draughon, School of Nursing, 2013 (alternate)  
Morgana Mongraw-Chaffin, Dept. of Epidemiology, 2013 (alternate)  
Tamorah Lewis, Dept. of Epidemiology, 2013 (GTPCI)  
Sanjay Rampal, Dept. of Epidemiology, 2012 (alternate)  
Evan Russell, Dept. of International Health, 2012 (alternate)  
Trevor Ellison, Dept. of Health Policy & Management, 2012 (alternate)  
Andrew Mirelman, Dept. of International Health, 2012 (alternate)  
Daniel Beachler, Dept. of Epidemiology, 2011 (alternate)

*Doctoral Thesis Committee*

Jean Olivier Twahira Rwema, Dept. of Epidemiology, 2020 – present  
Peter Kitonsa, Uganda TB Implementation Research Consortium, 2018 – 2020

Patricia Turimumahoro, Uganda TB Impl. Research Consortium, 2018 – 2020  
Michael Windle, Dept. of Epidemiology, 2017 – 2020  
Lauren Brown, Dept. of Health, Policy, & Management, 2017 – 2020  
Natalie Blackburn, Dept. of Health Behavior, UNC, 2017 – 2020  
Charles Batte, Uganda TB Implementation Research Consortium, 2018 – 2019  
Anil Pooran, University of Cape Town, 2013 – 2019  
Jess Wilhelm, Dept. of International Health, 2018  
Hyejeong Hong, School of Nursing, 2016 – 2018  
Eboni Lance, Dept. of Pediatrics (GTPCI), 2017  
Amanda Driscoll, Dept. of International Health, 2016 – 2017  
Douglas Mogul, Dept. of Epidemiology (GTPCI), 2016 – 2017  
Brian Wahl, Dept. of International Health, 2014 – 2017  
Michael Collaco, Dept. of Epidemiology (GTPCI), 2013 – 2016  
Kathryn Risher, Dept. of Epidemiology, 2013 – 2016  
Trevor Ellison, Dept. of Epidemiology (GTPCI), 2013 – 2016  
Danielle Clark, Dept. of Epidemiology, 2012 – 2014  
Ben Althouse, Dept. of Epidemiology, 2012 – 2013  
Alison Turnbull, Dept. of Epidemiology, 2011 – 2013

*Final Oral Exam Participation*

Natalie Blackburn, Dept. of Health Behavior, UNC, 2020  
Ashton Shaffer, Dept. of Epidemiology, 2020 (alternate)  
Hannah Alsdurf, Dept. of Epidemiology, McGill University, 2019  
Jose Salazar Osuna, GTPCI, 2019 (alternate)  
Ann Parker, GTPCI, 2019 (alternate)  
Yagahiro Castro, Dept. of International Health, 2019  
Caroline Hanson, Dept. of Health Policy & Mgmt, 2019 (alternate)  
Denali Boon, Dept. of Epidemiology, 2018  
Hyejeong Hong, School of Nursing, 2018  
Jess Wilhelm, Dept. of International Health, 2018  
Douglas Mogul, Division of Gastroenterology/GTPCI, 2018  
Matthew Dudley, Dept. of International Health, 2018 (alternate)  
Kathryn Bistline, Health Economics Div., Univ. of Cape Town, 2018  
Saba Rouhani, Dept. of International Health, 2018  
Cristina Garcia, Dept. of International Health, 2018 (alternate)  
Erin Whitehouse, School of Nursing, 2018  
Farida Al-Hosany, Dept. of Epidemiology, 2018 (alternate)  
Akshay Gupte, Dept. of International Health, 2017  
Julie Ruel-Bergeron, Dept. of International Health, 2017  
Lauren Brown, Dept. of Health, Policy, & Management, 2017  
Florian Marx, Dept. of Pediatrics, University of Stellenbosch, 2017  
Holly Schuh, Dept. of International Health, 2017  
Eboni Lance, Dept. of Pediatrics/GTPCI, 2017  
Brian Wahl, Dept. of International Health, 2017 (alternate)  
Eoghan Brady, Dept. of PFRH, 2017 (alternate)

Vivek Charu, Dept. of Biostatistics, 2016 (alternate)  
Nicholas Fancourt, Dept. of International Health, 2016  
Michael Collaco, Dept. of Epidemiology/GTPCI, 2016  
Ilene Hollin, Dept. of HPM, 2016 (alternate)  
Vidya Venugopal, Dept. of International Health, 2015 (alternate)  
Samuel Shillcutt, Dept. of HPM, 2014 (alternate)  
Danielle Clark, Dept. of Epidemiology, 2014  
Goro Yamada, Dept. of International Health, 2014 (alternate)  
Nan Guo, Dept. of Epidemiology, 2012  
David Hanna, Dept. of Epidemiology, 2012 (alternate)

*Classroom Instruction*

First-Year Epidemiology Doctoral Seminar (340.851.01), enrollment 9-16  
2019-2020 (primary instructor in 3<sup>rd</sup> term, co-instructor 1<sup>st</sup>, 2<sup>nd</sup>, 4<sup>th</sup> terms)  
Epidemiologic Methods 3 (340.753.01), enrollment 150-220, 2013-2018  
Methods and Applications of Cohort Studies (340.706.01, Summer Institute)  
enrollment 10, 2015

*Other Teaching: Classroom*

Lecturer, Introduction to Clinical Research (Summer), 2012 – 2017, 2020  
Guest Lecturer (Live Talk), Epidemiologic Basis for Tuberculosis Control  
(340.612.81), 2012/2015-2016/2020  
Guest Lecturer, Epidemiology of Tuberculosis, Columbia Mailman School of  
Public Health, 2013 – 2017, 2019-2020  
Guest Lecturer, Principles of Clinical Epidemiology (340.620.20), 2019 – 2020  
Guest Lecturer, Principles of Clinical Epidemiology (340.620.01), 2018 – 2020  
Guest Lecturer, Epidemiology and Public Health Impact of HIV/AIDS  
(340.646.01), 2012 – 2020  
Lab Instructor, Foundations of Public Health/Epidemiology, Johns Hopkins  
University School of Medicine, 2012, 2014, 2016 – 2020  
Guest Lecturer, Epidemiologic Basis for Tuberculosis Control (340.612.01),  
2012 – 2019  
Guest Lecturer, Advanced Topics on Control and Prevention of HIV  
(340.744.01), 2017 – 2018  
Lecturer, Advanced TB Diagnostics, McGill Summer Institute in Infectious  
Diseases and Global Health, 2011 – 2013, 2015 – 2017  
Guest Lecturer, Health Systems Program Seminar (221.860.01), 2014, 2017  
Guest Lecturer, Public Health Economics Seminar (313.861.01), 2014 – 2015,  
2017  
Guest Lecturer, Economic Evaluation 2 (313.631.01), 2012 – 2013, 2015  
Guest Lecturer, Public Health Dimensions of Global Tuberculosis Control: New  
Tools and Interventions (340.681.01, Summer Institute), 2014 – 2015  
Guest Lecturer, Tuberculosis, HIV, and Other Chronic Infections in the Tropics  
(223.685.01, Summer Institute), 2015

Co-Instructor, Professional Epidemiology Methods 2 (340.763.01), 2012 – 2015  
Clinical Instructor, Transition to the Wards Course, Johns Hopkins University  
School of Medicine, 2012 – 2015  
Guest Lecturer, Economic Evaluation 1 (313.630.01), 2014  
Guest Lecturer, Topics in the Epidemiology of HIV/AIDS (Summer Institute),  
2012 – 2013  
Co-Director, International Clinical, Operational, and Health Sciences Research  
and Training Award (ICOHRTA) program, TB control course, 2012  
Guest Lecturer and Lab Instructor, Epidemiologic Methods 3 (340.753.01),  
2011 – 2012  
Lab Instructor, Principles of Epidemiology (340.751.01), 2011

*Other Teaching: Non-Classroom*

JHU Center for AIDS Research (CFAR) K Club, 2018, 2020  
Columbia University HIV Implementation Science T32 Series, 2020  
Special Seminar: Translational & Implementation Research in Epidemiology  
Graduate Summer Institute of Epidemiology & Biostatistics, 2020  
University of Maryland/Mercy Hospital Grand Rounds, 2020  
Special Seminar: Epidemiology for decision-making: the case of new drugs for  
TB; Graduate Summer Institute of Epidemiology and Biostatistics, 2018  
JHU General Internal Medicine Fellowship lunch seminar, 2012, 2017  
Lecturer, Coursera course on HIV pre-exposure prophylaxis (MOOC), 2016  
Guest Presenter, TB Intensive Workshop, Rutgers University, 2016  
Special Seminar: Economic evaluation and cost-effectiveness analysis in HIV  
Johns Hopkins Center for AIDS Research, 2015  
Clinical Preceptor, Urban Health Residency Program, 2011 – 2015  
Lecturer, Coursera course on TB and HIV (MOOC), 2013  
Invited Lecturer, Post-graduate course on “Tuberculosis diagnostic research:  
beyond test accuracy,” Union World Conference on Lung Health,  
2011 – 2013  
TB Modeling Workshop, NIH/Bill and Melinda Gates Foundation (Amsterdam,  
The Netherlands), 2012  
Medical Grand Rounds, Johns Hopkins University School of Medicine, 2012  
Johns Hopkins Internal Medicine Residency Program: Evidence-Based Medicine  
Seminar, 2012  
TB Modeling Workshop, International Union Against TB and Lung Disease  
(New Delhi, India), 2012  
Health Economics Workshop Series, Malawi-Liverpool-Wellcome Trust  
(Blantyre, Malawi), 2012  
NIH Grant-Writing Workshop, Stellenbosch University (Cape Town, South  
Africa), 2012  
Faculty Section Leader, Designing Clinical Research for Residents,  
Department of Epidemiology and Biostatistics, UCSF, 2010  
Preceptor, UCSF Medical Student Homeless Clinic, 2010  
Mentor, Young Epidemiology Scholars (YES) competition, 2009



Coordinator, Students Teaching and Reaching Students, Baltimore Polytechnic  
Institute, 2008  
Peer Advisor, Johns Hopkins School of Medicin

## RESEARCH GRANT PARTICIPATION

### *Current Funding*

Rapid Research for Diagnostics Development in TB Network (2020 – 2025)  
NIH/NIAID (U01)

PI: Adithya Cattamanchi; Funding level: \$608,439 (JHU sub)

Role: Subcontract PI

Safety and tolerability of ultra-short course rifapentine and isoniazid (1HP) for  
prevention of tuberculosis in HIV-uninfected individuals (2020 – 2025)

NIH/NIAID (U01)

PI: Richard Chaisson; Funding level: \$916,330 (Year 1)

Role: Co-investigator, modeler, health economist

Hybrid trial for alcohol reduction among people with TB and HIV in India  
(HATHI) (2020 – 2025)

NIH/NIAAA (U01)

PIs: Geetanjali Chander, Amita Gupta; Funding level: \$665,919

Role: Co-investigator, health economist

Innovative contact tracing strategies for detecting TB in mobile rural and  
urban South African populations (2019 – 2024)

NIH/NIAID (R01)

**PI: David Dowdy**; Funding level: \$2,735,279

Understanding and improving the effectiveness of public health laboratory  
networks for infectious diseases in Ghana (2019 – 2024)

NIH/NIAID (R01)

PIs: Lee Schroeder, **David Dowdy**; Funding level: \$3,353,840

Enhancing models of HIV, viral hepatitis, STI's and tuberculosis to inform and  
improve infectious disease control in the United States (2019 – 2024)

US Centers for Disease Control and Prevention (CDC)

PI: Eli Rosenberg; Funding level: \$720,000 (JHU sub)

Role: Subcontract PI

Human-centered Design and Communities of Practice to Improve Delivery of  
Home-based TB Contact Investigation in Uganda (2019 – 2024)

NIH/NIAID (R01)

PI: J. Lucian Davis; Funding level: \$238,363 (JHU sub)

Role: Subcontract PI

Options for delivery of short-course tuberculosis preventive therapy: the 3HP Options trial (2018 – 2023)  
NIH/NHLBI (R01)  
PIs: Adithya Cattamanchi, **David Dowdy**; Funding level: \$3,422,055

PREVINE-TB: PRevent: EValuating the implementation of NEw strategies for preventive TB among people living with HIV in Brazil (2018 – 2023)  
NIH/NIAID (R01)  
PI: Jonathan Golub; Funding level: \$501,955 (year 1)  
Role: Co-investigator, health economist

Scaling up HPTN 074: a cluster randomized implementation trial of an evidence-based intervention for antiretroviral therapy for PWID in Vietnam (2018 – 2023)  
NIH/NIDA (R01)  
PIs: Vivian Go, William Miller; Funding level: \$398,798 (JHU sub)  
Role: subcontract PI

Cost-effectiveness of Novel TB Diagnostic Assays (TB-CAPT) (2020 – 2022)  
Foundation for Innovative New Diagnostics (FIND)  
**PI: David Dowdy**; Funding level: \$150,000

The Johns Hopkins Center for AIDS Research (JHU CFAR) (2017 – 2022)  
NIH/NIAID (P30)  
PIs: Richard Chaisson, Chris Beyrer; Funding level: \$3,442,547 (NIAID 2020)  
Role: Co-investigator; Co-Director, HIV Modeling Branch

A comprehensive snapshot of tuberculosis transmission in an urban Ugandan community (2017 – 2021)  
NIH/NHLBI (R01)  
**PI: David Dowdy**; Funding level: \$2,592,778

Point-of-care C-reactive protein-based tuberculosis screening in people living with HIV: a randomized trial (2019 – 2021; R33 funding through 2025)  
NIH/NHLBI (R61/R33)  
PIs: Christina Yoon, **David Dowdy**, Patrick Phillips; Funding level: \$695,174

Infection Without Symptoms? Understanding the Contribution of Minimally Symptomatic Disease to the Transmission of Tuberculosis (2020 – 2022)  
Johns Hopkins University Catalyst Award; Funding level: \$75,000  
**PI: David Dowdy**

Assessing social justice in economic evaluation to scale up novel TB drug regimens (2015 – 2021)  
NIH/NIAID  
PIs: Maria Merritt, **David Dowdy**; Funding level: \$1,354,296  
Rapid antigen-based tests for COVID-19 (2020 – 2021)

Foundation for Innovative New Diagnostics (FIND)  
**PI: David Dowdy**; Funding level: \$45,000

Modeling the impact of rapid antigen-based tests for COVID-19 (2020 – 2021)  
Bill and Melinda Gates Foundation  
PIs: Nimalan Arinaminpathy, **David Dowdy**; Funding level: \$38,758 (JHU sub)

IMPAACT4TB: Comparing health system models of 3HP delivery to increase %  
of eligible PLWHIV starting 3HP (2017 – 2021)  
UNITAID  
PI: Gavin Churchyard; Funding level: \$57,000,000  
Role: Co-investigator; primary health economist and modeler

Leadership and Operations Center, ACTG PHOENIx (2019 – 2021)  
AIDS Clinical Trials Group  
PI: Judith Currier; Funding level: \$178,633 (JHU sub)  
Role: Subcontract PI

Leveraging person centred care to improve HIV outcomes in Zambia  
(2019 – 2021)  
Bill & Melinda Gates Foundation  
PI: Izukanji Sikazwe; Funding level: \$64,996 (JHU sub)  
Role: subcontract PI

An adaptive randomized evaluation of nurse-led HIV treatment retention  
interventions for women living with HIV (2016 – 2021)  
NIH/NINR (R01)  
PI: Stefan Baral; Funding level: \$584,324 (2018)  
Role: Co-investigator, health economist

Single-saMPLE tuberculosis evaluation to facilitate linkage to care (2016 – 2021)  
NIH/NHLBI (R01)  
PI: Adithya Cattamanchi; Funding level: \$490,587 (JHU sub)  
Role: Subcontract PI

TB Modeling and Analysis Consortium (2013 – 2015, 2017 – 2021)  
Bill and Melinda Gates Foundation  
PI: Richard White; Funding Level: \$199,154 (JHU sub 2017-2021)  
Role: Subcontract PI

#### *Completed Funding*

Comparative effectiveness/implementation of TB case finding in rural South  
Africa (2015 – 2020)  
NIH/NIAID (R01)  
**PI: David Dowdy**; Funding level: \$3,060,691

Estimating the cost-effectiveness of TB REACH Wave 5 projects (2019 – 2020)  
Stop TB Partnership/TB REACH  
**PI: David Dowdy**; Funding level: \$50,000

Mathematical modeling of tuberculosis hot spots and transmission potential in  
Dhaka North City Corporation (2018 – 2019)  
Interactive Research and Development  
**PI: David Dowdy**; Funding level: \$132,110

Mathematical modeling of tuberculosis hot spots and transmission potential in  
zones 3, 4, and 5 of Dhaka South City Corporation (2018)  
Interactive Research and Development  
**PI: David Dowdy**; Funding level: \$100,000

Cost-effectiveness analysis of elderly TB screening programs in South Korea  
(2018 – 2019)  
Korean National Tuberculosis Association  
**PI: David Dowdy**; Funding level: \$26,700

Achieving TB control in Zambia through scale up of innovative tools and proven  
active TB case finding interventions (2018 – 2019)  
Stop TB Partnership  
PI: Izukanji Sikazwe; Funding level: \$63,580 (JHU sub)  
Role: Subcontract PI

Model of projected clinical and economic outcomes to help support the WHO  
guidelines update (2018)  
World Health Organization  
PI: Catherine Sutcliffe; Funding level: \$24,545  
Role: Co-investigator

Optimizing the efficiency of household contact tracing for TB control in South  
Africa (2017 – 2018)  
Medical Research Council/Newton Fund  
PI: Salome Charalambous; Funding level: \$59,246 (JHU sub)  
Role: Subcontract PI

PAK-T-TIH: Modeling TB in Pakistan (2017)  
Global Fund to fight AIDS, Tuberculosis, and Malaria  
PI: Aamir Khan; Funding level: \$296,412 (JHU sub)  
Role: Subcontract PI

Biomedical research and clinical studies for tuberculosis (2016 – 2020)  
NIH/NIAID  
PIs: Richard Chaisson, Neil Martinson; Funding level: \$53,212 (to JHU in 2016)  
Role: Co-Investigator

Informing decision-making for universal access to quality tuberculosis care in India – an operational epidemic/economic modeling framework (2016)  
Bill and Melinda Gates Foundation (through TB-MAC)  
**PI: David Dowdy**; Funding level: \$65,000

Modeling the impact of social protection on TB control: the S-PROTECT Consortium (2016)  
Bill and Melinda Gates Foundation (through TB-MAC)  
PI: Delia Boccia; Funding level: \$39,269 (JHU sub)  
Role: subcontract PI

Community-based approaches to ART delivery in Zambia (2015 – 2018)  
Bill and Melinda Gates Foundation  
PI: Charles Holmes; Funding level: \$107,332 (JHU sub)  
Role: Subcontract PI

Impact of PrEP among MSM in Baltimore: an agent-based model (2015 – 2016)  
JHU Center for AIDS Research  
**PI: David Dowdy**; Funding level: \$50,000

Epidemiological impact of geographically targeted strategies for adult and adolescent tuberculosis vaccination in South African mining populations (2015)  
Aeras Foundation  
**PI: David Dowdy**; Funding level: \$45,000

Enhancing models of HIV, viral hepatitis, STI's, and tuberculosis to inform and improve public health impact (2014 – 2019)  
US Centers for Disease Control and Prevention (CDC)  
PI: Patrick Sullivan; Funding level: \$732,748 (JHU sub)  
Role: Subcontract PI

Modeling the Reproducibility of Blood Assays for TB Infection (2014 – 2017)  
Canadian Institutes for Health Research  
PI: Madhukar Pai; Funding level: \$59,500 (JHU sub)  
Role: Subcontract PI

Patient and Provider Preferences for TB Preventive Therapies in HIV Infected Persons (2014 – 2015)  
National Institutes of Health (PEPFAR Supplement)  
PI: Jonathan Golub; Funding level: \$258,963  
Role: Co-investigator; health economist

Assessing Social Value in Economic Evaluation to Scale Up Novel TB Drug Regimens (2014 – 2015)  
NIH/NIAID (R56)

PI: Maria Merritt; Funding level: \$286,423  
Role: Co-investigator; decision analysis expert

Achieving an AIDS-Free Generation in Senegal (2014 – 2017)  
United States Agency for International Development (USAID)  
PI: Stefan Baral; Funding level: \$777,921  
Role: Co-investigator; health economist

Modeling the public health impact, affordability, and cost-effectiveness of HIV self-testing in Canada (2013 – 2016)  
Canadian Institutes of Health Research  
PI: Nitika Pant Pai; Funding level: \$47,566 (JHU sub)  
Role: Subcontract PI

Comparative Effectiveness of Rapid TB Diagnostics in Uganda (2013 – 2017)  
NIH/NIAID (R21)  
**PI: David Dowdy**; Funding level: \$410,735

Mobile Health for Implementation of Home-Based TB Contact Investigation in Uganda (2013 – 2019)  
NIH/NIAID (R01)  
PI: J. Lucian Davis; Funding Level: \$96,988 (JHU sub)  
Role: Subcontract PI

C-TRIUMPH: Cohort for TB Research by the Indo-US Medical Partnership (2013 – 2018)  
NIH/NIAID (U01)  
PI: Amita Gupta; Funding Level: \$3,000,000 (approx)  
Role: Co-investigator; mathematical modeler

Reducing Hazardous Alcohol Use & HIV Viral Load: An RCT in ART Clinics in Vietnam (2013 – 2019)  
NIH/NIDA (R01)  
PI: Vivian Go; Funding Level: \$2,941,740  
Role: Co-investigator; health economist

QuantiFERON Gold Test for Detecting TB Infection in HIV/AIDS Patients in Brazil (2013 – 2019)  
NIH/NIAID (R01)  
PI: Jonathan Golub; Funding Level: \$3,002,105 (\$100,000 supplement to Dowdy)  
Role: Co-investigator; health economist and mathematical modeler

Modeling the Population-Level Impact of Geographically Targeted Strategies for Adult and Adolescent Tuberculosis Vaccination (2013 – 2014)  
Aeras Foundation  
**PI: David Dowdy**; Funding level: \$93,675

Modeling the Impact and Cost-Effectiveness of Drug Susceptibility Tests for Novel Tuberculosis Drug Regimens (2013 – 2018)

Bill and Melinda Gates Foundation

**PI: David Dowdy**; Funding level: \$489,883

Efficiency and Yield of Contact Investigations for TB in Heterogeneous, HIV-Driven Epidemics (2013 – 2014)

Johns Hopkins Center for AIDS Research Faculty Development Award

**PI: David Dowdy**; Funding level: \$50,000

Tuberculosis Clinical Diagnostics Research Consortium (2012 – 2013)

NIH/HHS

PI: Susan Dorman; Funding level: \$5,882,887

Role: Co-investigator; director of modeling core

A User-Friendly Epidemic-Economic Model of Diagnostic Tests for Tuberculosis (2012 – 2015)

NIH/NIAID (R21)

**PI: David Dowdy**; Funding level: \$445,500

Point-of-Care Tests for Drug-Resistant TB: Impact & Cost-Effectiveness (2012 – 2013)

Stop TB Partnership New Diagnostics Working Group

**PI: David Dowdy**; Funding level: \$15,000

Target Product Profiles for Point-of-Care TB Testing (2012 – 2014)

Bill and Melinda Gates Foundation

PI: Madhukar Pai; Funding level: \$60,000 (JHU sub)

Role: Subcontract PI

Modeling the Public Health Impact of TB and HIV Diagnostics (2012 – 2017)

Canadian Institutes of Health Research

PIs: Madhukar Pai, **David Dowdy**; Funding level: \$274,350

Study of the Cost-Effectiveness of REMoxTB Regimens (2012 – 2014)

Global Alliance for TB Drug Development

PI: Anna Vassall; Funding level: \$250,000 (approx)

Role: Subcontract PI

Impact of a New Molecular TB Test on TB/HIV Outcomes among HIV-Infected Malawians (2012 – 2017)

NIH/NIAID (R01)

PI: Richard Chaisson; Funding level: \$2,876,464

Role: Co-investigator; project coordinator, lead health economist

Innovative Approaches for TB Control in Brazil (ICOHRTA) (2012)  
NIH/Fogarty  
PI: Richard Chaisson; Funding level: \$220,000  
Role: Co-investigator, co-director of summer course

Innovative approaches for diagnosing TB in the era of HIV (2011 – 2012)  
Canadian Institutes of Health Research  
PI: Madhukar Pai; Funding level: \$30,000 (JHU sub)  
Role: Co-investigator; mathematical modeler

Consortium to Respond Effectively to the AIDS/TB Epidemic (2011)  
Bill and Melinda Gates Foundation  
PI: Richard Chaisson; Funding level: \$85,690,061  
Role: Co-investigator; mathematical modeler, Brazil site

Medical Scientist Training Program (2002 – 2008)  
NIH/NIGMS (T32)  
PI: Siliciano  
Role: MD/PhD trainee

## **ACADEMIC SERVICE**

### *Department/Track*

Dept of Epidemiology Curriculum Committee, 2012 – 2015, 2018 – 2019  
Chair, 2019 – present  
Translational Epidemiology Initiative, Director, 2017 – present  
Infectious Disease Epidemiology Comprehensive Exam Coordinator, 2019 – 2020  
Dept of Epidemiology Comprehensive Exam Committee, 2011–2014, 2016–2018  
Infectious Disease Epidemiology Research in Progress Coordinator, 2016 – 2019  
Epidemiology 750 (Core Methods) Series Coordinator, 2017 – 2018  
Selection Committee, Departmental Teaching Assistantships, 2017 – 2018  
Chair, Search Committee, General Epi & Methods faculty search, 2017  
Infectious Disease Epidemiology Admissions Committee, 2017  
Translational Epidemiology Task Force, 2016  
Infectious Disease Epidemiology Journal Club Coordinator, 2012 – 2013

### *School*

Committee on Academic Standards, 2019 – present  
MPH Executive Board, 2018 – present  
MPH Student Matters Subcommittee, 2019 – present  
MPH Admissions Committee, 2018 – present  
Dean's Task Force on Undergraduate Public Health Studies, 2020  
Faculty Senate, 2017 – 2019  
Ad hoc committee service, Advancement & Promotions, 2016 – 2019



Committee on Information Technology, 2011 – 2012

*University*

Public Health Studies Advisory Board, KSAS, 2019 – present  
MD/PhD Program Committee, School of Medicine, 2016 – present  
NIH (T32/D34) Training Grants (four), Core Faculty, 2012 – present  
KL2 Selection Committee, School of Medicine, 2016 – 2018  
Medical Student Research Symposium, Abstract reviewer, 2015 – 2018  
Tri-School Day of Service, Faculty Site Leader, 2011 – 2015

**PRESENTATIONS**

*Scientific Meetings (first-/senior-author presentations since 2018)*

1. Kendall EA, Kitonsa PJ, Nalutaaya A, Kamoga C, Mukiibi J, Baik Y\*, Kato-Maeda M, Cattamanchi A, Katamba A, **Dowdy D**. A high-resolution snapshot of subclinical TB via community-wide sputum testing in an urban Ugandan community. 51<sup>st</sup> Union World Conference on Lung Health, Sevilla, Spain (virtual), October 2020. Oral presentation.
2. Baik Y\*, Rickman HM\*, Hanrahan CF, Mmolawa L, Kitonsa PJ, Sewelana T, Nalutaaya A, Kendall EA, Lebina L, Martinson N, Katamba A, **Dowdy DW**. A simple clinical score for predicting active tuberculosis when same-day microbiological testing is unavailable. 51<sup>st</sup> Union World Conference on Lung Health, Sevilla, Spain (virtual), October 2020. Oral presentation (OA-02-509-21).
3. Jo Y\*, Gomes I\*, Flack J, Salazar-Austin N, Churchyard G, Chaisson RE, **Dowdy DW**. Cost-effectiveness of scaling up short course preventive therapy for tuberculosis among children across 12 countries. 51<sup>st</sup> Union World Conference on Lung Health, Sevilla, Spain (virtual), October 2020. Oral presentation.
4. Gomes I\*, Dong C\*, Qin ZZ, Vandewalle P, Khan A, Creswell J, Sohn H, **Dowdy D**. Standardized framework for evaluating the cost-effectiveness of tuberculosis case-finding and treatment initiation projects. 51<sup>st</sup> Union World Conference on Lung Health, Sevilla, Spain (virtual), October 2020. E-poster presentation (EP16-251-22).
5. Gomes I\*, Reja M, Shrestha S, Pennington J, Jo Y\*, Baik Y\*, Islam S, Faisal AJ, Cordon O, Roy T, Suarez P, Hussain H, **Dowdy D**. Incorporating patient reporting patterns to evaluate geographically targeted tuberculosis interventions in Dhaka, Bangladesh. 51<sup>st</sup> Union World Conference on Lung Health, Sevilla, Spain (virtual), October 2020. E-poster presentation (EP16-157-21).
6. Gomes I\*, Reja M, Shrestha S, Pennington J, Jo Y\*, Baik Y\*, Islam S, Faisal AJ, Cordon O, Roy T, Suarez P, Hussain H, **Dowdy D**. Incorporating patient

- reporting patterns to evaluate geographically targeted tuberculosis interventions in Dhaka, Bangladesh. American Thoracic Society 2020 Annual Meeting. Philadelphia, PA, March 2020, cancelled due to COVID-19.
7. Robsky K\*, Kitonsa PK, Mukiibi J, Nakasolya O, Isooba D, Nalutaaya A, Salvatore P\*, Kendall E, Katamba A, **Dowdy D**. Using spatial heterogeneity of TB notification rates to identify high-risk areas in Kampala, Uganda. 50<sup>th</sup> Union World Conference on Lung Health, Hyderabad, India, October 2019. E-poster presentation (EP-08-168-01).
  8. Jo Y\*, Sohn H, Hanrahan C, Hangoma P, Kagujje M, Muyoyeta M, **Dowdy D**. Investigation of factors influencing cost effectiveness of a comprehensive active case finding strategy in Zambia. 50<sup>th</sup> Union World Conference on Lung Health, Hyderabad, India, October 2019. Oral abstract (OA-01-304-31).
  9. Jo Y\*, Gomes I\*, Shrestha S, Hill A, Marks S, **Dowdy D**. Determinants of cost effectiveness of targeted testing and treatment for latent tuberculosis infection in California, Florida, New York, and Texas. 50<sup>th</sup> Union World Conference on Lung Health, Hyderabad, India, October 2019. Poster presentation (PS-12-624-31).
  10. Tucker A\*, Mmolawa L, Tampi R, Hanrahan C, Nonyane B, Stracker N\*, West N, Lebina L, Martinson N, **Dowdy D**. Cost of contact investigation for tuberculosis in rural South Africa. 50<sup>th</sup> Union World Conference on Lung Health, Hyderabad, India, October 2019. Poster presentation (PS-08-581-31).
  11. Sohn H, Kasaie P, Kendall E, Gomez G, Vassall A, Pai M, **Dowdy D**. Informing decision-making for universal access to quality tuberculosis diagnosis in India: an economic-epidemic model of rapid molecular testing placement strategies. 50<sup>th</sup> Union World Conference on Lung Health, Hyderabad, India, October 2019. Oral presentation (OA-06-347-31).
  12. Kendall E, Malhotra S, Cook-Scalise S, Denkinger C, **Dowdy D**. Expected patient impact of the novel BPamZ regimen depends upon implementation approach and rifampin-resistance epidemiology. 50<sup>th</sup> Union World Conference on Lung Health, Hyderabad, India, October 2019. Oral presentation (OA-22-454-01).
  13. Kendall E, Malhotra S, Cook-Scalise S, Denkinger C, **Dowdy D**. Expanded drug susceptibility testing to accompany fluoroquinolone-containing universal regimens: the setting dependence of optimal Xpert XDR use. 50<sup>th</sup> Union World Conference on Lung Health, Hyderabad, India, October 2019. Oral presentation (OA-06-342-31).
  14. Hanrahan C, Lebina L, Mmolawa L, Nonyane BAS, West N, Siwelana T, Martinson N, **Dowdy D**. Transfer out to clinic-based TB treatment following hospital TB diagnosis in South Africa. 50<sup>th</sup> Union World Conference on Lung Health, Hyderabad, India, October 2019. Poster presentation (PS-32-855-02).

15. Kadota J, Musinguzi A, Welishe F, Nabunje J, Ssemata JL, Katamba A, Semitala FC, Cattamanchi A, **Dowdy DW**. Willingness to accept financial reimbursement for tuberculosis preventive therapy among people living with HIV in Kampala, Uganda. 50<sup>th</sup> Union World Conference on Lung Health, Hyderabad, India, October 2019. Poster presentation (PS-08-584-31).
16. Shrestha S, Cherng S\*, Hill AN, Reynolds S, Flood J, Barry PM, Readhead A, Oxtoby M, Lauzardo M, Privett T, **Dowdy D**. Impact and effectiveness of state-level tuberculosis interventions in California, Florida, New York, and Texas: a model-based analysis. *Epidemics*7: 7<sup>th</sup> International Conference on Infectious Disease Dynamics, Charleston, SC, USA, December 2019. Poster presentation (P3.050).
17. Jo Y\*, Shrestha S, Marks S, **Dowdy D**. Model-based cost-effectiveness of state-level tuberculosis interventions in California, Florida, New York, and Texas. 49<sup>th</sup> Union World Conference on Lung Health, The Hague, The Netherlands, October 2018. Oral presentation (OA02-210-25).
18. Stracker N\*, Hanrahan C, Mmolawa L, Tucker A, West N, Lebina L, Martinson N, **Dowdy D**. Catastrophic costs of tuberculosis illness and treatment in rural South Africa: a risk factor analysis. 49<sup>th</sup> Union World Conference on Lung Health, The Hague, The Netherlands, October 2018. Short oral presentation (SOA09-1088-26).
19. Kasaie P\*, **Dowdy D**. Projecting the Population-Level Impact of Pre-Exposure Prophylaxis for HIV among MSM in Baltimore City. Modeling Social Dynamics and Health Behavior Conference, Pittsburgh, PA, October 2018. Oral Presentation.
20. **Dowdy DW**. Using models of transmission to prioritize action in the fight to end TB. International Conference on Emerging Infectious Diseases, Atlanta, GA, August 2018. Oral presentation.
21. Shrestha S (given for **Dowdy D**). State level heterogeneities in TB incidence in key populations. National TB Controllers Association (NTCA) Annual Conference, Rancho Mirage, CA, May 2018. Plenary oral presentation.
22. **Dowdy DW**. Dynamics of TB in the United States: A closer look at heterogeneity on the state level. North American Region of the International Union Against TB and Lung Disease 2018, Chicago, IL, March 2018. Oral presentation.

*Invited Seminars (since 2015)*

1. COVID-19 Roundtable. Annual Health Econometrics Workshop. Virtual. October 2020.

2. Epidemiological considerations for economists: COVID-19. National Bureau of Economic Research (NBER) Summer Institute. Virtual. July 2020.
3. A Global Perspective on the COVID-19 Pandemic. American Thoracic Society, Philadelphia, PA (virtual), July 2020.
4. Toward Evidence-Based Integration of Services for HIV, Non-Communicable Diseases, and Substance Use: Insights from Modeling. AIDS 2020, San Francisco, CA (virtual), July 2020.
5. Advancing Evidence-Based Decision-Making for COVID-19. Baltimore, MD (virtual), May 2020.
6. Translational Epidemiology: Lessons from the COVID-19 pandemic. University of Florida Department of Epidemiology monthly seminar. Gainesville, FL (virtual), May 2020.
7. Simple Principles for Interpreting Complex Models: How to Make Sense of COVID-19 Projections. Dean's Lecture Series: Perspectives on the Pandemic. Penn State University (virtual), April 2020.
8. Diagnosis of subclinical and incipient TB: Does it matter? INTERTB meeting, London, UK, September 2019.
9. TB Modeling Research Group: Progress and Goals. TB Modeling and Analysis Consortium Annual Meeting, Istanbul, Turkey, September 2019.
10. Five years of TB NEEMA: CAMP/JHU accomplishments and lessons learned. Centers for Disease Control and Prevention: NEEMA close-out meeting, Atlanta, GA, August 2019.
11. Contact tracing versus facility-based screening for active TB case finding in rural South Africa: A pragmatic cluster-randomized trial (Kharitode TB). Inter-CFAR Working Group on HIV/TB, webinar, May 2019.
12. Introduction to the TB Modeling Research Group. TB Modeling and Analysis Consortium Annual Meeting, Washington, DC, September 2018.
13. Modeling TB in Karachi. Presentation to the Global Fund to fight AIDS, Tuberculosis, and Malaria, Geneva, Switzerland, January 2018.
14. TB modeling: webinar for TB REACH Grantees. Presentation to TB REACH, Geneva, Switzerland, January 2018.

15. A comprehensive snapshot of tuberculosis transmission in an urban Ugandan community. Presentation to the National TB Reference Laboratory, Kampala, Uganda, October 2017.
16. The future of drug-resistant tuberculosis. Briefing for the United States Senate. Washington, DC, September 2017.
17. A comprehensive snapshot of tuberculosis transmission in an urban Ugandan community. Presentation to the National TB Program, Kampala, Uganda, September 2017.
18. Modeling the role of novel TB diagnostics: black and white or shades of grey? TB MAC Modeling Research Group Meeting, Glion, Switzerland, September 2017.
19. Modeling TB case detection: challenges and ways forward. TB MAC Modeling Research Group Meeting, Glion, Switzerland, September 2017.
20. Screening for tuberculosis with Xpert MTB/RIF versus fluorescent microscopy among people newly diagnosed with HIV in rural Malawi: preliminary results from a cluster randomized trial. Johns Hopkins Center for Tuberculosis Research annual meeting, Baltimore, MD, June 2017.
21. Urban TB initiative: evidence from modeling. Zero TB Bangladesh meeting, Dhaka, Bangladesh, May 2017.
22. TB modeling and translational epidemiology group. Invited presentation, NITBRI World TB Day Conference, White Oak, MD, April 2017.
23. Improving TB models: input from the front lines. Breakout presentation, National TB Conference, Atlanta, GA, April 2017.
24. Drivers of TB transmission. Plenary presentation, National TB Conference. Atlanta, GA, April 2017.
25. Using local data to achieve Zero TB. Interactive Research and Development: Zero TB Pakistan Meeting, Karachi, Pakistan, February 2017.
26. Ethics of novel regimens for multidrug-resistant tuberculosis. Berman Institute seminar series. Baltimore, MD, February 2017.
27. Not just predicting the future: What population-level modeling can teach us about the biology and treatment of TB. Invited talk, National Institutes of Health, Bethesda, MD, January 2017.

28. Understanding and measuring TB transmission in the urban environment. Interactive Research and Development: Zero Karachi planning meeting, Liverpool, UK, October 2016.
29. Modeling to inform new Target Regimen Profiles. WHO symposium at the 47<sup>th</sup> Union World Conference on TB and Lung Disease, Liverpool, UK, October 2016.
30. Spatial considerations in the epidemiology of TB: challenges and opportunities. Small area estimates and spatial statistics group, September 2016.
31. Ancient disease, modern epidemiology. World TB Day Symposium, Johns Hopkins University, April 2016.
32. Understanding and modeling gaps in TB transmission. NIH Halting TB Transmission Workshop, Bethesda, MD, March 2016.
33. Filling the gaps: data needs for country-level modeling. Technical Advisory Group on Research Investment Cases meeting, WHO, Geneva, March 2016.
34. Epidemiological modeling of TB elimination. International Union Against TB and Lung Disease-North American Region. Denver, CO, March 2016.
35. Modeling the impact of social protection on TB. S-PROTECT kickoff meeting, Baltimore, MD, February 2016.
36. Impact and cost-effectiveness: the contribution of modeling. University of Cape Town Advanced TB Diagnostics Course, Cape Town, South Africa, December 2015.
37. Active case finding is not the answer. University of Cape Town Advanced TB Diagnostics Course, Cape Town, South Africa, December 2015.
38. Inference in the data-sparse world of tuberculosis: A play in three acts. Causal Inference Seminar, Johns Hopkins Department of Biostatistics, November 2015.
39. Data for action: collection and use of local data to end tuberculosis. Launch of Lancet series on tuberculosis, Dubai, United Arab Emirates, October 2015.
40. Diagnostic testing for tuberculosis: from implementation to impact. Johns Hopkins MSTP Program 40<sup>th</sup> Anniversary Symposium, Baltimore MD, October 2015.
41. Next steps for epidemiological modeling and socioeconomic determinants of TB. TB Modeling and Analysis Consortium Meeting, New York City, October 2015.

42. NYC Model: Update. TB-NEEMA meeting of the U.S. Centers for Disease Control and Prevention, Atlanta, September 2015.
43. Transmission modeling in NEEMA. TB Epidemiological Studies Consortium, Centers for Disease Control and Prevention, Atlanta, September 2015.
44. Labs, ledgers, and lives saved: the impact of diagnostic strategies on the epidemiology and economics of tuberculosis. Keynote address for the 9<sup>th</sup> National Conference on Laboratory Aspects of Tuberculosis, Atlanta, June 2015.
45. The future of drug-resistant TB. How do we present a nightmare? Briefing for the United States Senate, Washington, March 2015.
46. Systematic review of economic evaluations of the lateral flow urine lipoarabinomannan assay for diagnosis of active tuberculosis in HIV-infected individuals. World Health Organization Expert Group Meeting, Geneva, June 2015.
47. Modeling scale-up across a city. TB “Cities” Meeting, Dubai, March 2015.
48. Updates in evaluations of new technologies. TB Modeling and Analysis Consortium, Geneva, April 2015.
49. Modeling TB in New York City. Centers for Disease Control and Prevention, Atlanta, April 2015.

## **ADDITIONAL INFORMATION**

### *Personal Statement*

I am an infectious disease epidemiologist and practicing general internist with a primary research interest in the epidemiology of tuberculosis (TB).

My research is inherently interdisciplinary, including strong components of:

**Observational and experimental epidemiology** (PI/MPI of 6 R01/equivalent studies)

- Observational studies of TB transmission
- Clinical trials of TB case finding, diagnosis, treatment, and prevention

**Global health**

- Primary research sites in South Africa & Uganda, collaboration in >10 countries

**Health economics**

- Focus on measuring the cost of implementing global health interventions

**Mathematical modeling**

- Compartmental, agent-based, and other mechanistic models of TB transmission

**Implementation research**

- Core faculty of a large TB implementation research consortium in Uganda

**Translational epidemiology**

- Translating data into practice and policy at local, country, and global levels

**Diagnostic epidemiology**

- Studies into the process of detecting and diagnosing infectious diseases

During the COVID-19 pandemic, my research has remained primarily focused on TB, but I have taken an increasingly prominent role in scientific communication, including through traditional and alternative (e.g. social) media outlets. My vision for the future is one in which epidemiologists work collaboratively with other stakeholders to incorporate the best available data into guidelines and policy decisions, while also making the scientific process more responsive to the needs and realities of a broader society.

### *Keywords*

Epidemiology; Tuberculosis; HIV; Translational Research; Diagnostic Techniques and Procedures; Medical Economics; Theoretical Models



# BENNETT HAYES ERICKSON

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## EDUCATION

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**Franklin and Marshall College** Bachelor of Arts in Mathematics *May 2012*  
Minor in Classical Archaeology and Ancient History

## PROFESSIONAL EXPERIENCE

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**Greylock McKinnon Associates**, Boston, MA *2011-Present*  
*Firm practicing in complex consulting, expert economic analysis and litigation support, specializing in class action litigations and Medicare and Medicaid fraud investigations.*

**Senior Associate** *July 2020-Present*

- Managed team specializing in Medicare and Medicaid fraud investigations, requiring analyses of large pharmaceutical and medical claims data
- Collaborated directly with academic affiliates and clients to develop economic models used in litigation consulting projects and as evidence at multiple trials
- Strengthened company relationships with industry experts, lawyers and external analyst teams on multiple cases

**Associate** *July 2017-June 2020*

- Developed algorithms for robust sampling and extrapolation techniques used in logic-based approaches to complex issues
- Established data matching techniques to increase team efficiency and accuracy in merging data between different parties

**Junior Associate** *July 2015-June 2017*

- Managed team in structuring timelines for data analyses, document review and production of court filed reports while sticking to strict court specified deadlines
- Led technical team in an investigation recovering \$390 million and in a whistleblower lawsuit recovering \$20 million
- Onboarded and mentored new analysts by providing company insights and technical advice

**Senior Analyst** *July 2013-June 2015*

- Streamlined team process for producing case materials and added quality control checks on production completeness
- Created damage models for but-for scenarios submitted in billions of dollars' worth of litigation cases and settlements
- Constructed and presented data estimation techniques to transform figures into usable data and actionable insights

**Analyst** *September 2012-June 2013*

- Developed skills in data verification and quality control checks using SAS, Excel and VBA for damage models, but-for modeling and Cournot modeling used in various forms of litigation
- Processed numerous sources of large data, including Centers for Medicare and Medicaid Services claims data, hospital claims data, pharmaceutical claims data, rebate data, IMS drug and marketing data
- Completed SAS training courses in data manipulation techniques, macro language and SQL

**Intern** *Summer 2011*

- Gathered and organized data, documents, and literature used in case reports
- Researched Medicare and Medicaid payments structures for senior economists used in future litigations

## SKILLS

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Software - SAS, MS Access, Advanced Excel, VBA, Python, STATA, SQL, Matlab, LaTeX

## AFFILIATIONS AND HONORS

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Fundraiser, Best Buddies Jolly Jaunt *2012-present*  
Dean's List *Fall 2008, Spring 2009 and Spring 2011*  
Member, Varsity Lacrosse Team *Fall 2008-Spring 2012*

# Elena Valerie Fernández

New Orleans LA 70113 • (703) 861-6277 • fernandezev@alumni.vcu.edu

## Education

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<b>Doctor of Philosophy in Pharmacoeconomics and Health Outcomes</b> Virginia Commonwealth University, School of Pharmacy	Conferred Aug 2020 Richmond, VA
<ul style="list-style-type: none"><li>Dissertation: New persistent and chronic opioid use in cancer survivors after curative intent radiation</li></ul>	
<b>Doctor of Pharmacy</b> Virginia Commonwealth University, School of Pharmacy	Conferred May 2018 Richmond, VA
<b>Bachelor of Science in Biochemistry</b> University of Mary Washington	Conferred May 2012 Fredericksburg, VA

## Professional Experience

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**Monument Analytics** Remote  
A Healthcare Consultancy

**Manager** Aug 2020 - Present  

- Developing high quality expert witness material and health economic analysis

**Consultant** May 2020 - Aug 2020  

- Designed and produced client facing data analysis proposals

**Virginia Commonwealth University, School of Pharmacy** Richmond, VA  
Department of Pharmacotherapy and Outcomes Science (Norman V. Carroll, RPh, PhD)

**PhD Candidate** Nov 2019 - Aug 2020  

- Conducted analyses with SAS, Stata and Excel Visual Basic for Applications (VBA) on 10 years of clinical and opioid pharmacy electronic medical record data from Massey Cancer Center with time series, multinomial logistic regression, mixed linear model, panel data model, and survival analysis

**Research Student** Jan 2015 - Aug 2020  

- Designed and developed a systematic literature review on the pharmacists' role in opioid use disorder
- Designed and created a budget impact analysis on theoretical philanthropic distribution of opioid reversal agents for all patients with cancer and chronic opioid use at Massey Cancer Center
- Designed, conducted statistical analyses in SAS, and presented research on patient decisions to delay or forego cancer treatment from the Medication Expenditure Panel Survey (MEPS) cancer supplement

**Graduate Teaching Assistant** Aug 2018 - Aug 2019  

- Classes: Community Pharmacy Practice Management I; Pharmacoeconomics; Foundations III; Clinical Therapeutics Modules: Cardiovascular, Endocrinology, Respiratory/Immunology

**PharmD, PhD Summer Fellow** Jun 2015 - Aug 2015 & Jun 2018 - Aug 2018  

- Conducted, presented, and published systematic literature review on the link between medication adherence and use of mail-order pharmacies in chronic disease states
- Designed, conducted statistical analyses in JMP and Excel, presented, and published research on an innovative interviewing skills workshop to improve pharmacy professional development education

**PharmD Candidate** May 2017 - May 2018  

- Evaluated formulary tier use, performed post hospital medication reconciliations, and encouraged adherence and engagement in the Anthem/CareMore health model
- Developed Microsoft Excel Visual Basic programs to analyze opioid pain scale utilization and notify physicians with appropriate evidence-based recommendations and predict patients at risk
- Developed clinical pharmacy skills including medication reconciliation, medication adherence, patient counseling, pharmacy workflow, and clinical evaluation in various pharmacy practice settings including community, ambulatory, hospital, transitions of care, and managed care

**Cancer Research Training Award Fellow**

Sept 2012 - Jul 2014

- Utilized molecular pharmacology techniques (tissue culture, transfection, western blot, RT-PCR, ELISA), designed, conducted statistical analyses in PRISM, presented, and published research on Enzalutamide sensitization by HIF-1 $\alpha$  inhibition in hypoxic, castrate-resistant prostate cancer cells
- Utilized molecular pharmacology techniques, analyzed, presented and published research on the differential expression of OATP1B3 mediating unconjugated testosterone influx

**Summer Cancer Research Training Award Fellow**

Jun - Aug 2010 & Jun - Aug 2011

- Utilized molecular pharmacology techniques including sequencing, analyzed and presented research on the association of ABCB1 polymorphisms and tariquidar-induced increases in docetaxel half-life

**Professional Methodological Skills**

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**Software**

SAS, Stata, SPSS, Excel Visual Basic for Applications (VBA), TreeAge, NVivo, Atlas.ti, Microsoft Office

**Modeling**

Economic Models, Budget Impact Analysis, Cost-Effectiveness Analysis, Decision Tree Modeling, Markov Models, Regression Analysis, Survival Analysis, Sensitivity Analysis

**Other Research Methods**

Study Design, Biostatistics, Systematic Literature Review, Patient Reported Outcomes, Electronic Medical Record Analysis, Retrospective Database Analysis, Qualitative Research, Medical & Scientific Writing

**Relevant Graduate Coursework**

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**Didactic Coursework at VCU**

Applied Pharmacoeconomics, Pharmaceutical Benefit Management, Econometrics, Health Economics, Applied Data Analysis Lab I & II, Graduate Research Methods I & II, Epidemiologic Methods for Research

**ISPOR Short Courses**

Budget Impact Analysis I & II, Pharmacoeconomic Modeling, Introduction to Health Technology Assessment, Elements of Pharmaceutical/Biotech Pricing I & II, Propensity Scores in Observational Studies

**Licenses and Certifications**

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Virginia State Board of Pharmacy Pharmacist Licensure #0202217124	Expires Dec 2021
APhA Pharmacy-Based Immunization Delivery	2016
Revive! Opioid Overdose Reversal for Virginia Naloxone Administration	2016

**Selected Pharmacy Professional Practice Experiential Education**

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**Geriatrics and Ambulatory Managed Care**

Richmond, VA

Anthem/CareMore (Steven Swaringen, RPh)

Sept - Nov 2017

- Evaluated formulary tier utilization, performed post hospital medication reconciliations and outreach to improve adherence and encourage engagement in the CareMore health model

**Advanced Hospital**

Richmond, VA

HealthSouth Rehabilitation Hospital of Virginia (Brice Arbuckle, PharmD)

Jul - Aug 2017

- Developed a Microsoft Excel Visual Basic program to analyze opioid pain scale utilization and notify physicians via email with appropriate evidence-based recommendations

**Selected Awards and Honors**

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**Top New Investigator Research Presentation - Poster Award**

May 2021

Virtual ISPOR Annual Conference

<b>Love of Learning Award</b> Phi Kappa Phi Honor Society	Sept 2020
<b>Charles T. Rector &amp; Thomas W. Rorrer Jr. Dean's Award for Excellence in Graduate Study</b> Graduate Affairs Committee, VCU School of Pharmacy (Runner-Up)	May 2020
<b>V. A. Yanchick Award</b> Graduate Affairs Committee, VCU School of Pharmacy	May 2020
<b>Top 10 Percent Research Poster Presentation Award</b> ISPOR Annual Conference in New Orleans	May 2019
<b>Pre-Doctoral Fellowship in Health Outcome Disparities</b> American Foundation for Pharmaceutical Education	Mar 2019
<b>Nellie Wakeman Fellowship</b> American Foundation for Pharmaceutical Education and Kappa Epsilon Fraternity	Mar 2019
<b>Award for Academic Excellence in Pharmacoeconomics &amp; Health Outcomes</b> Scholarships and Awards Committee, VCU School of Pharmacy	May 2018
<b>Student Excellence in Interprofessionalism Recognition Award</b> VCU Center for Interprofessional Education and Collaborative Care	May 2018
<b>W. Roy Smith Scholarship Fund for an Outstanding Fourth Year Student</b> Scholarships and Awards Committee, VCU School of Pharmacy	Jan 2018
<b>Gateway to Research Award</b> American Foundation for Pharmaceutical Education	May 2017
<b>VCU School of Pharmacy Class of 2009 Scholarship</b> Scholarships and Awards Committee, VCU School of Pharmacy	Jan 2017
<b>Outstanding PostBac Poster Award</b> National Institutes of Health	May 2014

## Publications

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1. **Fernández EV**, Warriner CL, David T, Gordon L, Twigg G, Carroll NV. Potential cost savings by prevention of adverse drug events with a novel medication review program. *J AM Pharm Assoc.* 2020 Jan; S1544-3191(19):30543-6. PMID: 31948934
2. Caldas LM, Eukel HN, Matulewicz AT, **Fernández EV**, Donohoe KL. Expanding educational gaming success: A nonsterile compounding themed escape room. *Curr Pharm Teach Learn.* 2019 Oct;11(10):1049-1050. PMID: 31685175
3. **Fernández EV**, Reid JC, Woodard LM, Holdford DA, Hylton-Gravatt LA, Donohoe KL. Implementation of an interviewing skills workshop for pharmacy students. *Curr Pharm Teach Learn.* 2019 Mar;11(3):277-286. PMID: 30904150
4. Sissung TM, Ley AM, Strobe JD, McCrea EM, Beedie SL, Peer CJ, Shukla S, vanVelkinburgh JC, Reece KM, Troutman S, Campbell T, **Fernandez E**, et. al. Differential expression of OATP1B3 mediates unconjugated testosterone influx. *Mol Cancer Res.* 2017 Aug;15(8):1096-1105. PMID: 28389619
5. **Fernández EV**, McDaniel JA, Carroll NV. Examination of the link between medication adherence and use of mail-order pharmacies in chronic disease states. *JMCP.* 2016 Nov;22(11):1247-1259. PMID: 27783552
6. **Fernandez EV**, Reece KM, Ley AM, et. al. Dual targeting of the androgen receptor and hypoxia-inducible factor 1 $\alpha$  pathways synergistically inhibits castration-resistant prostate cancer cells. *Mol Pharmacol.* 2015 Jun;87(6):1006-12. PMID: 25829060

7. **Fernández EV**, Price DK, Figg WD. Prostate cancer progression attributed to autonomic nerve development: Potential for therapeutic prevention of localized and metastatic disease. *Cancer Biol Ther.* 2013 Nov;14(11):1005-6. PMID: 24025357

## Abstracts and Poster Presentations

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1. **Fernandez E**, Slade A, Patterson J, Nadpara P, Mays DP, Carroll NV. Incidence and Associated Risks of New Persistent and Continued Opioid Use in Patients with Cancer Receiving Radiotherapy. Poster presentation at the 2021 Virtual ISPOR Annual Conference. May 2021. **\*Top New Investigator Research Presentation Award**
2. **Fernandez E**, Slade A, Patterson J, Nadpara P, Mays DP, Carroll NV. Prescribed Opioid Doses in Cancer Survivors Pre- and Post-Curative Intent Radiation. Poster presentation at the 2021 Virtual ISPOR Annual Conference. May 2021.
3. Jay J, **Fernandez E**, Slade A, Patterson J, Nadpara P, Mays DP, Carroll NV. Opioid Utilization in Cancer Survivors- A Systematic Literature Review. Poster presentation at the 2021 Virtual ISPOR Annual Conference. May 2021.
4. **Fernández EV**, Slade A, Patterson JA, Nadpara P, Mays D, Carroll NV. New persistent and chronic opioid use in patients with cancer receiving radiotherapy. Poster presentation at the 2020 ISPOR Annual Conference. Orlando, FL, May 2020 (Conference Cancelled)
5. Caldas LM, Eukel HN, Matulewicz AT, **Fernandez EV**, Donohoe KL. Applying educational gaming success to a nonsterile compounding escape room. Poster presentation at the AACP Annual Meeting. Chicago, IL. Jul 2019
6. **Fernández EV**, Carroll NV. Delay or forego of treatment and associated services in patients with cancer: a medical expenditure panel survey (MEPS) study. Poster presentation at the 2019 ISPOR Annual Conference. New Orleans, LA, May 2019 **\*Top 10 Percent Research Poster Presentation Award**
7. Hassan Z, **Fernandez E**, Petraco J, Clay W, Branch B. Student council for an inclusive environment (SCIE) ambassador program: A student perspective of diversity and inclusion on the Medical College of Virginia campus (MCV). Poster presentation at the VCU 50: Commemorating History: Challenges and Opportunities Symposium. Virginia Commonwealth University, Richmond, VA, Nov 2018
8. **Fernandez EV**, Warriner CL, David T, Gordon L, Twigg G, Carroll NV. Potential cost savings by prevention of adverse drug events with a novel medication review program. Poster presentation at the 2018 ISPOR European Conference. Barcelona, Spain, Nov 2018
9. **Fernandez EV**, Salgado TM, Gatewood S, Carroll NV. Pharmacists' behaviors in dispensing opioid reversal agents under the Virginia standing order. Poster presentation at the AMCP Nexus 2018 Conference. Orlando, FL, Oct 2018
10. **Fernandez EV**, Reid JC, Woodard LM, Holdford DA, Hylton-Gravatt L, Donohoe K. Implementing an interviewing skills workshop for pharmacy students. Poster presentation at the 2017 ASHP Midyear Clinical Meeting Student Poster Session. Orlando, FL, Dec 2017
11. **Fernández EV**, McDaniel JA, Carroll NV. Examination of the link between medication adherence and use of mail-order pharmacies in chronic disease states. Diversity Scholars in Research Week Student Poster Exhibition. Virginia Commonwealth University, Richmond, VA, Feb 2016
12. **Fernández EV**, Reece KM, Troutman SM, Sissung TM, Price DK, Chau CH, Figg WD. Enzalutamide sensitization by HIF-1 $\alpha$  inhibition in hypoxic, castrate-resistant prostate cancer cells. Poster presentation at the NIH PostBac Poster Day. Bethesda, MD, May 2014 **\*Outstanding PostBac Poster Award**
13. **Fernández EV**, Slunt KM. Development of a Reliable Sample Preparation Method for Estrogen ELISA Assay. Poster presentation at the Regional ACS Meeting. Charlottesville, VA, Apr 2012 & Apr 2011, Southeastern Regional Meeting of the ACS. Richmond, VA, Oct 2011

14. **Fernández EV**, Sissung TM, Kirkland CT, Price DK and Figg WD. Influence of TGFβ on Thalidomide Treatment in Hormone Sensitive Prostate Cancer. Poster presentation at the NIH Summer Research Program Poster Day. Bethesda, MD, Aug 2011
15. Sissung TM, **Fernández EV**, Kirkland CT, Gardner ER, Venzon D, Kelly R, Bates SE, and Figg WD. ABCB1 polymorphisms are associated with tariquidar-induced increases in docetaxel half-life. Poster presentation at the Annual Meeting of the American Society of Clinical Pharmacology and Therapeutics. Dallas, TX, Mar 2011
16. **Fernández EV**, Sissung TM, Price DK, English B, Kirkland CT, Bates SE, and Figg WD. Pharmacogenetics in Anticancer Therapy: SNPs in ABCB1 and docetaxel and tariquidar. Poster presentation at the NIH Summer Research Program Poster Day. Bethesda, MD, Aug 2010

## Presentations

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1. The Association of Radiotherapy with New Persistent and Chronic Opioid Use in Patients with Cancer. PHAR 690, Pharmacy Research Seminar, Virginia Commonwealth University, Richmond, VA, Oct 2019
2. The Potential Role of Radiotherapy on the Risk for New Persistent and Chronic Opioid Use in Patients with Cancer. PHAR 690, Pharmacy Research Seminar, Virginia Commonwealth University, Richmond, VA, Apr 2019
3. Plenary Session II Panelist: Conversations across generations at VCU student and alumni. VCU 50: Commemorating History: Challenges and Opportunities Symposium, Virginia Commonwealth University, Richmond, VA, Nov 2018
4. Cost-Effectiveness of Evolocumab and Cardiovascular Disease: Decision Tree Analysis. PHAR 671 Applied Pharmacoeconomics Presentation, VCU School of Pharmacy, Richmond, VA, May 2017
5. OAT1B3, a relevant transporter in prostate cancer. Genitourinary Branch Meeting, NCI, NIH, Bethesda, MD, Mar 2014

## Manuscript Reviewer

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Value in Health	2020 - 2021
BMJ Supportive and Palliative Care	2021
Journal of Managed Care & Specialty Pharmacy	2017 - 2021

## Professional Memberships

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Phi Kappa Phi	2019 - Present
Rho Chi Honor Society, Lambda Chapter	2019 - Present
Phi Lambda Sigma (PLS) Pharmacy Leadership Society, Beta Nu Chapter	2016 - Present
Academy of Managed Care Pharmacy (AMCP)	2016 - Present
International Society for Pharmacoeconomics and Outcomes Research (ISPOR)	2015 - Present
Kappa Epsilon (KE) Professional Fraternity, Tau Chapter	2015 - Present

## Languages

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**English**, Native Proficiency; **Spanish**, Fluent Bilingual Proficiency (DELE A2 Certified)

**Sara E. Gross, Esquire**  
**1720 Sherwood Avenue**  
**Baltimore, Maryland 21239**  
**(443) 858-1834**  
**saralegal21@yahoo.com**

### **Bar Memberships**

- Maryland (December 2004)
- United States District Court for the District of Maryland (April 2005)
- United States Supreme Court (November 2013)
- United States Court of Appeals for the Fourth Circuit (February 2016)

### **Professional Memberships**

- Baltimore City Bar Association (2012-present)
- Baltimore Bar Foundation (May 2019-present)
- Wrangler's Law Club (February 2018-present)
- International Municipal Lawyers Association: Affirmative Litigation Practice Group Co-Leader (March 2021-present)

### **Awards/Honors**

- 2017 *The Daily Record* Very Important Professionals (VIP) List
- 2016 Outstanding Volunteer Attorney, Homeless Persons Representation Project
- 2015 Baltimore City Bar Association Government and Public Interest Lawyer of the Year
- 2011 Prosecution award from the Northwest Citizens on Patrol

### **Work Experience**

#### **Baltimore City Department of Law**

Division Chief, Affirmative Litigation (October 2020-present)

Chief Solicitor, Litigation (May 2017-present)

Assistant Solicitor, Litigation (April 2012-May 2017)

Currently serving as counsel for the Mayor and City Council of Baltimore, a municipal corporation. As Division Chief, responsible for litigating cases in which the Mayor and City Council is a plaintiff, investigating possible claims, managing outside counsel, and supervising junior attorneys. Also handle a variety of civil defense cases, including motor torts, premises liability, telecommunications, contracts, tax, civil rights, and procurement in the District and Circuit Courts of Baltimore City as well as the appellate courts. Tasked with handling complex litigation in the federal courts. Position focuses on representing the MCCB and its employees at all stages of litigation, including investigation, discovery, written and oral motions, settlement negotiations, trial advocacy, and appellate practice.

#### **Assistant State's Attorney, Office of the State's Attorney for Baltimore City** *September 2005-April 2012*

Responsibilities included charging, indicting, arraigning, preparing, and trying cases before judges and juries in the District and Circuit Courts; investigating cases; conducting witness interviews and proffer sessions; drafting written motions and

responses; arguing legal motions; completing pre-trial and discovery work; drafting appellate briefs; litigating post-conviction petitions; and supervising law students practicing pursuant to Rule 16.

**Judicial Law Clerk to the Honorable Carol E. Smith, Circuit Court for Baltimore City**

*August 2004-September 2005*

Served as law clerk to the Judge in Charge of the Civil Division of the Baltimore City Circuit Court, writing correspondence, supervising judicial interns, communicating with attorneys, briefing cases, performing legal research, and drafting opinions and orders for civil cases, District Court appeals, *habeas* petitions, administrative agency appeals, criminal cases, and post-conviction petitions.

**Judicial Intern to the Honorable Susan K. Gauvey, United States District Court for the District of Maryland**

*January 2004-April 2004*

**Education**

**University of Maryland School of Law (Baltimore, Maryland)**

Juris Doctor (with Honor), May 2004

Grade point average: 3.38

Class rank: Top third

- *The Business Lawyer* (Official publication of the American Bar Association's Section of Business Law): Articles Editor (2003-2004); Staff Member (2002-2003)
- Moot Court Board (2002-2004)
- Phi Alpha Delta: Clerk (2003-2004); Treasurer (2002-2003)

**University of Aberdeen (Aberdeen, Scotland)**

Comparative Law Program, Summer 2002

**Indiana University (Bloomington, Indiana)**

Bachelor of Arts (Dual Major in Political Science and Communications), May 2001

**Volunteer/Pro Bono Activities**

- Handle veteran benefits and expungement cases for the Homeless Persons Representation Project (May 2014-present)
- Handle name and gender identity change petitions and advanced directives for Free State Justice (April 2016-present)
- Assist seniors with estate planning for Senior Legal Services and Maryland Volunteer Lawyers Service (May 2017-present)





# INFORMATION SECURITY POLICY

## MONUMENT ANALYTICS

### LAST REVISION DATE

August 12, 2022

## 1 Introduction

### 1.1 PURPOSE

This policy defines the technical controls and security configurations users and Information Technology (IT) administrators are required to implement to ensure the integrity and availability of the data environment at Monument Analytics, hereinafter, referred to as the Company. It serves as a central policy document with which all employees and contractors must be familiar and defines actions and prohibitions that all users must follow. The policy provides IT managers within the Company with policies and guidelines concerning the acceptable use of Company technology equipment, e-mail, Internet connections, databases, and future technology resources and information processing. This policy must be adhered to by all Company employees or temporary workers at all locations and by contractors providing services to the Company as subcontractors.

### 1.2 SCOPE

This policy document defines common security requirements for all Company personnel and systems that create, maintain, store, access, process or transmit information. This policy also applies to information resources owned by others, such as contractors of the Company, entities in the private sector, in cases where Company has a legal, contractual, or fiduciary duty to protect said resources while in Company custody. In the event of a conflict, the more restrictive measures apply. This policy covers the Company network system which is comprised of various hardware, software, communication equipment and other devices designed to assist the Company in the creation, receipt, storage, processing, and transmission of information. This definition includes equipment connected to any Company domain, either hardwired or wirelessly, and includes all stand-alone equipment that is deployed by the Company at its office locations or at remote locales.

### 1.3 PRIVACY OFFICER

The Company has established a Privacy Officer as required by the Health Insurance Portability and Accountability Act of 1996 (HIPAA). This Privacy Officer will oversee all ongoing activities related to the development, implementation, and maintenance of the Company privacy policies in accordance with applicable federal and state laws. Additionally, the Privacy Officer will identify areas of concern within the Company and function as the first line of defense in enhancing the appropriate security posture.

The current Privacy Officer for the Company is:

Sara Geiger, [sara.geiger@monumentanalytics.com](mailto:sara.geiger@monumentanalytics.com), 302-584-1368

## 2 Employee Responsibilities

The first line of defense in data security is the individual Company user. Company users are responsible for the

security of all data which may come to them in whatever format. The Company is responsible for maintaining ongoing training programs to inform all users of these requirements.

All software programs and documentation generated or provided by employees, consultants, or contractors for the benefit of the Company are the property of the Company unless covered by a contractual agreement. Nothing contained herein applies to software purchased by Company employees at their own expense.

## 2.1 PROHIBITED ACTIVITIES

Personnel are prohibited from the following activities. The list is not inclusive and other prohibited activities are referenced elsewhere in this document.

- Crashing an information system. Deliberately crashing an information system is strictly prohibited.
- Attempting to break into an information resource or to bypass a security feature. This includes running password-cracking programs or sniffer programs and attempting to circumvent file or other resource permissions.
- Introducing, or attempting to introduce, computer viruses, Trojan horses, peer-to-peer (P2P) or other malicious code into an information system.
- Browsing. The willful, unauthorized access or inspection of confidential or sensitive information to which you have not been approved on a "need to know" basis is prohibited. The Company has access to patient level health information which is protected by HIPAA regulations which stipulate a "need to know" before approval is granted to view the information. The purposeful attempt to look at or access information to which you have not been granted access by the appropriate approval procedure is strictly prohibited.
- Personal or Unauthorized Software. Use of personal software is prohibited. All software installed on Company cloud environment and computers must be approved by the Company.
- Software Use. Violating or attempting to violate the terms of use or license agreement of any software product used by the Company is strictly prohibited.

## 2.2 ELECTRONIC COMMUNICATION, E-MAIL, INTERNET USAGE

As a productivity enhancement tool, the Company encourages the business use of electronic communications. However, all electronic communication systems and all messages generated on or managed by Company owned equipment are considered the property of the Company – not the property of individual users.

Company provided resources, such as a cloud system, e-mail, and Internet software and services are intended for business purposes. Personnel must ensure that their use of the resources provided by The Company does not violate any of the following:

- a) Copyright violations – This includes the act of pirating software, music, books and/or videos or the use of pirated software, music, books and/or videos and the illegal duplication and/or distribution of information and other intellectual property that is under copyright.
- b) Illegal activities – Use of Company information resources for or in support of illegal purposes as defined by federal, state, or local law is strictly prohibited.
- c) Commercial use – Use of Company information resources for personal or commercial profit is strictly prohibited.
- d) Political Activities – All political activities are strictly prohibited on Company premises or servers. The Company encourages all its employees to vote and to participate in the election process, but these

activities must not be performed using Company assets or resources.

- e) Harassment – The Company strives to maintain a workplace free of harassment and that is sensitive to the diversity of its employees. Therefore, the Company prohibits the use of computers, e-mail, voice mail, instant messaging, texting, and the Internet in ways that are disruptive, offensive to others, or harmful to morale. For example, the display or transmission of sexually explicit images, messages, and cartoons is strictly prohibited. Other examples of misuse include, but is not limited to, ethnic slurs, racial comments, off-color jokes, or anything that may be construed as harassing, discriminatory, derogatory, defamatory, threatening or showing disrespect for others.

Generally, while it is NOT the policy of the Company to monitor the content of any electronic communication, the Company is responsible for servicing and protecting the Company's equipment, networks, data, and resource availability.

## 2.3 CLIENT PROPRIETARY DATA

Client proprietary data are private and confidential data that must be protected. All proprietary data received from any client must be protected from unauthorized access. Individuals with authorized access to client proprietary data are required to adhere to the same information security policies provided in this document for The Company's data. All client proprietary data must be stored on the Company's cloud environment where the privacy and confidentiality of proprietary data are protected. Downloading or transferring any client proprietary data is strictly prohibited.

## 2.4 REPORTING SOFTWARE MALFUNCTIONS

Users should inform the appropriate Company personnel when the user's software does not appear to be functioning correctly. The malfunction - whether accidental or deliberate - may pose an information security risk.

## 2.5 REPORT SECURITY INCIDENTS

It is the responsibility of each Company employee or contractor to report perceived security incidents on a continuous basis to the appropriate supervisor or security person. Security breaches shall be promptly investigated. If criminal action is suspected, the Company Privacy Officer shall contact the appropriate law enforcement and investigative authorities immediately, which may include but is not limited to the police.

## 2.6 TRANSFER OF SENSITIVE/CONFIDENTIAL INFORMATION

When confidential or sensitive information from one individual is received by another individual while conducting official business, the receiving individual shall maintain the confidentiality or sensitivity of the information in accordance with the conditions imposed by the providing individual. All employees must recognize the sensitive nature of data maintained by the Company and hold all data in the strictest confidence. Any purposeful release of data to which an employee may have access is a violation of Company policy and will result in personnel action and may result in legal action.

## 2.7 DE-IDENTIFICATION / RE-IDENTIFICATION OF PERSONAL HEALTH INFORMATION

(PHI)

As directed by HIPAA, all personal identifying information is removed from all data that falls within the definition of PHI before it is stored or exchanged. De-identification is defined as the removal of any information that may be used to identify an individual or of relatives, employers, or household members.

PHI includes: names, addresses, geographic subdivisions smaller than a state, all elements of dates directly related to the individual (dates of birth, marriage, death, etc.), telephone numbers, facsimile numbers, driver's license numbers, electronic mail addresses, social security numbers, medical record numbers, health plan beneficiary numbers, account numbers, certificate/license numbers, vehicle identifiers and serial numbers, device identifiers and serial numbers, web Universal Resource Locators (URLs), internet protocol (IP) address numbers, biometric identifiers, and full face photographic images and any comparable images

## 2.8 ANTIVIRUS SOFTWARE INSTALLATION

Antivirus software must be installed on all Company computers or all computers with access to Company cloud environment. Antivirus software must be updated regularly (once per month at minimum). The antivirus software currently implemented by the Company is Webroot.

## 3 Cloud Environment

All of Monument's data is stored in a secure cloud environment operated, managed, and protected by Microsoft. The system is built on SharePoint, OneDrive, and Azure which are all HIPAA-compliant and meet all industry recognized certifications for data and operational security (SOC (1, 2 Type 1 and 2, 3) ISO 27001, HITRUST, SSAE 18, and FedRamp). Only users who are required to use the data for the study will be authorized to have access as the data will be secured with password protection and a two-factor authentication system. The cloud system is designed to prevent the download of any sensitive database on non-authorized devices.

Individual users shall have unique logon IDs and passwords. An access control system shall identify each user and prevent unauthorized users from entering or using information resources. User IDs and passwords are required to gain access to the cloud environment and data. All passwords are restricted by a corporate-wide password policy to be of a "Strong" nature. This means that all passwords must conform to restrictions and limitations that are designed to make the password difficult to guess.

Passwords must meet the following minimum requirements:

- 1) Not contain the user's account name or parts of the user's full name that exceed two consecutive characters
- 2) Be at least 8 characters in length
- 3) Contain characters from three of the following four categories:
  - a) English uppercase characters (A through Z)
  - b) English lowercase characters (a through z)
  - c) Base 10 digits (0 through 9)
  - d) Non-alphabetic characters (for example, !, \$, #, %)

Complexity requirements are enforced when passwords are changed or created.

Restrictions on Sharing Passwords - Passwords shall not be shared, written down on paper, or stored within a file or database on a workstation and must be kept confidential.

Restrictions on Recording Passwords - Passwords are masked or suppressed on all online screens and are never printed or included in reports or logs. Passwords are stored in an encrypted format.

All individuals are required to disconnect from the cloud environment when it is not in use. Microsoft Authenticator two-factor authentication is required for all users to access.

## 4 Telecommuting

The Company considers telecommuting to be an acceptable work arrangement in certain circumstances. This policy is applicable to all employees and contractors who work either permanently or only occasionally outside of the Company office environment. It applies to users who work from their home full time to employees on temporary travel, to users who work from a remote office location, and to any user who connects to the Company network from a remote location.

While telecommuting can be an advantage for users and for the organization in general, it presents new risks in the areas of confidentiality and security of data. Workers linked to the Company's network become an extension of the wide area network and present additional environments that must be protected against the danger of spreading Trojans, viruses, or other malware. This arrangement also exposes the corporate as well as patient data to risks not present in the traditional work environment.

Telecommuting workers are required to follow all corporate, security, confidentiality, HR, or Code of Conduct policies that are applicable to other employees/contractors.

- Password Use: The use of a strong password is even more critical in the telecommuting environment. Do not share your password or write it down where a family member or visitor can see it.
- Training: Personnel who telecommute must complete the same annual privacy training as all other employees.
- Contract Specific: There may be additional requirements specific to the individual contracts to which an employee is assigned.

## 5 Security Awareness and Training

All workforce members shall receive appropriate training concerning Company's security policies and procedures. Such training shall be provided prior to the effective date of the HIPAA Security Rule and on an ongoing basis to all new employees. Such training shall be repeated annually for all employees. The Privacy Officer will oversee the IT training program.

# Signature Form

I have reviewed, understand, and agree to comply with the above policy.

Name \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

Signature \_\_\_\_\_

*Sara J Geiger* \_\_\_\_\_

August 17, 2022 \_\_\_\_\_

Signature of Company Privacy Officer

Date