# ­­David Peter Kao, M.D.

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Assistant Professor of Medicine, Division of Cardiology

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## Education

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| *List actual degrees (e.g., M.B.B.S.) not US equivalent (e.g., M.D.).* |
| BS, Biomedical Engineering, The Johns Hopkins University, Baltimore, MD | 1998 |
| MD, The Johns Hopkins University, Baltimore, MD | 2003 |

## Training

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| *List postdoctoral training and education programs.* |
| Internship, Internal Medicine, Stanford Hospital and Clinics, Stanford, CA | 2003-4 |
| Residency, Internal Medicine, Stanford Hospital and Clinics, Stanford, CA | 2004-6 |
| Chief Resident, Internal Medicine, Stanford Hospital and Clinics, Stanford, CA | 2006-7 |
| Postdoctoral FellowSupervisor: Amar Das, M.D., Ph.D.Division of Biomedical Informatics Research, Stanford University School of Medicine, Stanford, CA | 2007-8 |
| Fellowship, General Cardiology, University of Colorado School of Medicine, Aurora, CO | 2008-11,14 |

## Academic Appointments

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| *List academic appointments.* |
| Research InstructorDept. of Medicine, University of Colorado School of Medicine, Aurora, CO | 2012-4 |
| Assistant ProfessorDept. of Medicine, University of Colorado School of Medicine, Aurora, CO | 2015- |

## Other Positions and Employment

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| *List Leadership Positions in administration (e.g., Chair, Division Chief, Assistant Dean), research (e.g., Center Director) and clinical practice (e.g., Director).List educational leadership positions under Educational Activities.List external leadership positions under Professional Societies or Service, as appropriate.* |
| *List non-academic employment history, noting position held, employer, location, brief description of duties and responsibilities.* |
| Pre-doctoral research fellow, National Institutes of Allergy and Infectious Disease Hamilton, MT. Advisor: Robert J Belland, Ph.D.  | 1998-9 |
| Hospitalist, Eden Medical Center, Castro Valley, CA | 2006-8 |
| Analyst/Ontologist, Research Informatics, Childrens Hospital Colorado, Aurora, CO | 2011-6 |
| Physician informaticist, UCHealth Advanced Clinical Decision Support Program, Aurora, CO  | 2012- |
| Adjunct Faculty, Computational Bioscience Program, University of Colorado School of Pharmacology, Aurora, CO. | 2014- |
| Chairman, Clinical Decision Support Steering Committee, University of Colorado Health, Aurora, CO  | 2015- |
| Secondary faculty, Division of Biomedical Informatics and Personalized Medicine, University of Colorado School of Medicine | 2016- |
| Member, Division of Biomedical Informatics and Personalized Medicine Executive Steering Committee, University of Colorado, Aurora, CO | 2016- |
| Co-Chairman, Pharmacogenomics Implementation Committee, University of Colorado School of Medicine, Aurora, CO | 2016- |
| Member, Joint ACC/AHA Task Force on Clinical Data Standards | 2016-8 |
| Member, Digital Health Working Group, Inova Heart Failure Collaboratory and Think Tank, Falls Church, VA | 2017- |
| Medical Director, Colorado Center for Personalized Medicine, Aurora, CO | 2020- |

## Honors and Awards

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| *Include elite fellowship programs, to which you were accepted on the basis of a competitive, as opposed to first-come, first-serve, application process.* |
| Tau Beta Pi Engineering Honor SocietyWhiting School of Engineering, The Johns Hopkins University  | 1996 |
| Ranked first in graduating classWhiting School of Engineering, The Johns Hopkins University | 1998 |
| Richard J. Johns Award for outstanding achievement in biomedical engineeringWhiting School of Engineering, The Johns Hopkins University  | 1998 |
| Outstanding First Year Fellow 2008-2009Division of Cardiology, University of Colorado School of Medicine  | 2009 |
| Outstanding Research Fellow 2010-2011Division of Cardiology, University of Colorado School of Medicine | 2011 |
| Big Data Course for Computational Medicine FellowshipNIH Big Data to Knowledge (BD2K) Program, Mayo Clinic | 2015 |
| Big Data Analysis Challenge: Creating New Paradigms for HF ResearchNational Heart, Lung, and Blood Institute [link](https://www.nhlbi.nih.gov/grants-and-training/funding-opportunities-and-contacts/NHLBI-heart-failure-data-challenge/selected-solutions)($50,000) | 2020 |

## Professional Memberships and Activities

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| *List by organization, noting any leadership and other positions under each organization.* |
| American College of CardiologyMember | 2008- |
| American Medical Informatics AssociationMember | 2009- |
| American Heart AssociationMember | 2011- |
| Heart Failure Society of AmericaMember | 2011- |
| European Society of Cardiology Heart Failure AssociationMember | 2016- |

## Editorial Activities

**Reviewer (**<https://publons.com/researcher/2605985/david-p-kao/>)

|  |  |
| --- | --- |
| British Medical JournalJournal of Biomedical Informatics |  |
| Circulation: Heart Failure |  |
| Circulation Research |  |
| JACC: Heart Failure |  |
| Journal of the American Heart Association |  |
| European Heart Journal |  |
| American Heart Journal |  |
| Journal of American College of Cardiology |  |
| Heart |  |
| Journal of Cardiac Failure |  |
| JACC: Basic and Translational Science |  |
| Journal of the American Heart Association |  |
| European Journal Heart Failure |  |
| Nature Scientific Reports |  |

## Educational Activities

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| *Group activities if repeated over multiple years. List institution for all non-UMMS educational activities.* |
| Teaching Activities |  |
| *List formal teaching activities in courses, noting your role (course director, lecturer). If appropriate, divide into separate sections by type of learner (medical student, resident etc)* |
| Computerized decision support, PHRD 7965: Health Care InformaticsLecturer, University of Colorado School of Pharmacy, Aurora, CO | 2015-6 |
| Cardiovascular disease sub-block small group preceptorUniversity of Colorado School of Medicine, Aurora, CO | 2015 |
| Practical use of publicly available data repositories, BIOS 6685: Intro to Public Health Informatics Course, Colorado School of Public Health | 2016 |
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**Advising and Mentoring Activities**

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| *List trainees whom you have directly advised or mentored; divide by learner type (student, residents, postdocs etc) if appropriate, as shown in the examples below. Include their current position if known.*  |
| Students |  |
| 1. Jeffrey Lewis, University of Colorado School of Medicine

Role: Mentored Scholarly Activity, Primary MentorCurrent Position: Resident, Family Medicine, University of Colorado | 2013 |
| Residents |  |
| 1. Elma Kreso, University of Colorado

Role: Research MentorCurrent Position: Internal Medicine, Colorado Permanente Medical Group, Denver, CO | 2009-11 |
| 1. Eric Wang, University of Colorado

Role: Research MentorCurrent Position: Internal Medicine, University of Colorado | 2016 |
| 1. Maggie Butler, University of Colorado

Role: Research MentorCurrent Position: Internal Medicine, University of Colorado | 2016-8 |
| 1. Miranda Merrill, University of Colorado

Role: Research MentorCurrent Position: Fellow, General Cardiology, Oregon Health Sciences Univ. | 2016-8 |
| 1. Peter Hyson, University of Colorado

Role: Research MentorCurrent position: Resident, Internal Medicine, University of Colorado | 2019- |
| 1. Maeveen Riordan, University of Colorado

Role: Research MentorCurrent position: Resident, Internal Medicine, University of Colorado | 2020- |
| PhD Candidates |  |
| 1. Michael Hinterberg, University of Colorado

Role: Computational Biology, PhD Advisory CommitteeCurrent Position: PhD staff scientist, SomaLogic | 2014-6 |
| 1. Laura Stevens, University of Colorado

Role: Computational Biology, PhD Advisory CommitteeCurrent Position: PhD Candidate, University of Colorado | 2016- |
| 1. Amena Keshawarz, University of Colorado

Role: Department of Epidemiology, PhD Advisory Committee | 2018- |
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| **Postdoctoral Trainees/Fellows** |  |
| 1. Ellise Gambahaya, University of Zimbabwe College of Health Sciences

Role: Cardiovascular Research MentorCurrent Position: Research Scholar, University of Zimbabwe | 2012-7 |
| 1. Paradzai Gapu, University of Zimbabwe College of Health Sciences

Role: Cardiovascular Research MentorCurrent Position: Attending Physician, Cardiology, University of Zimbabwe | 2012-4 |
| 1. Tafadzwa Zikhali, University of Zimbabwe College of Health Sciences

Role: Cardiovascular Research MentorCurrent Position: Attending Cardiologist, Harare Central Hospital, Zimbabwe | 2012-4 |
| 1. Caroline Musemwa, University of Zimbabwe College of Health Sciences

Role: Cardiovascular Research MentorCurrent Position: Attending Cardiologist, Harare Central Hospital, Zimbabwe | 2012-4 |
| 1. Tsungai Chipamaunga, University of Zimbabwe College of Health Sciences

Role: Cardiovascular Research MentorCurrent Position: Attending Cardiologist, University of Zimbabwe | 2012-4 |
| 1. Andrew Mataruse, University of Zimbabwe College of Health Sciences

Role: Cardiovascular Research MentorCurrent Position: Attending Neurologist, University of Zimbabwe | 2012-4 |
| 1. Jennifer Jarvie, University of Colorado

Role: T32 Cardiovascular Research MentorCurrent Position: General cardiologist, Denver Heart, Denver, CO | 2016-8 |
| 1. Kelsey Flint, University of Colorado

Role: Cardiovascular Research MentorCurrent Position: Fellow, Cardiovascular Medicine, University of Colorado | 2016-9 |
| 1. Katie Derington, University of Colorado

Role: Member, Master’s Final Project CommitteeCurrent Position: Outcomes Research Fellow, University of Colorado | 2017- |
| 1. Suneet Purohit, University of Colorado

Role: Research MentorCurrent position: Advanced heart failure specialist, Anchorage, AK | 2017- |
| 1. Bethany Doran, University of Colorado

Role: Cardiovascular Research MentorCurrent Position: Adjunct Research Faculty, University of Colorado  | 2018- |
| 1. Stanley Swat, University of Colorado

Role: Research MentorCurrent position: Fellow, General Cardiology, University of Colorado | 2018- |
| **Faculty** |  |
| 1. Katy Trinkley, University of Colorado

Role: Research MentorCurrent position – Associate Professor, Skaggs School of Pharmacy | 2015- |

**Grants**

*Current*

National Heart, Lung, and Blood Institute 1 K08HL125725 PI: Kao 2017-22

Title: Development of a Closed-Loop Integrated Framework For discovery of Novel Treatment Strategies in Heart Failure (CLIFFNOTES-HF)

The purpose of this Career Development Award is to gain skills and experience in using real-world clinical data to construct a data warehouse, perform complex statistical and data mining analyses to identify personalized management strategies for heart failure patients and implement these findings in an electronic health record. [link](https://projectreporter.nih.gov/project_info_description.cfm?aid=9243492&icde=50329183&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC&pball=)

*Role*: Principal Investigator

*Annual direct costs*: $175,733

*Completed*

NLM Training Grant T15 LM007033 PI: Altman 2007-8

Title: Graduate Training in Biomedical Informatics

The program offers intensive training in biomedical informatics, specifically core biomedical informatics, domain biology or medicine, computer science, probability and statistics, and ethical, legal, and social issues. [link](https://projectreporter.nih.gov/project_info_description.cfm?aid=7651363&icde=52109068&ddparam=&ddvalue=&ddsub=&cr=11&csb=default&cs=ASC&pball=)

*Role*: Trainee

NHBLI Training Grant T32 HL007822 PI: Buttrick 2010-2

Title: Post-graduate Studies in Cardiovascular Research

This training grant award supports development of technologies for high-throughput analysis of cardiovascular data to identify and characterize heart failure subtypes regarding implications for personalization of heart failure management. [link](https://projectreporter.nih.gov/project_info_description.cfm?aid=7827996&icde=52109074&ddparam=&ddvalue=&ddsub=&cr=17&csb=default&cs=ASC&pball=)

*Role*: Trainee

UC Center for Women’s Health Research PI: Kao 2012-4

Title: Mentored Research in Women’s Health, Sex Differences, and Cardiovascular Disease

The goal of this work is to use large existing databases such as hospital discharge data and clinical trial to study sex differences in cardiovascular disease.

*Role*: Principal investigator

*Annual direct costs*: $34,710

NHBLI Loan Repayment Program L30 HL110124 PI: Kao 2012-4, 2017-

Title: Personalizing heart failure management by integrating clinical and molecular data

The goal of this work is to develop methods, infrastructure, and analytics strategies to elucidate mechanisms and identify predictors of drug response in heart failure.

*Role*: Principal investigator

*Annual direct costs*: $37,500

Fogarty International Center R24 TW998905 PI: Hakim 2012-5

Title: Cerebrovascular, Heart Failure, Rheumatic Heart Disease Interventions Strategy Initiative

The goal of this work is to develop a self-sustaining academic division of cardiology at the University Zimbabwe to train future generations of Zimbabwean cardiologists. [link](https://grantome.com/grant/NIH/R24-TW008905-01)

*Role*: Co-investigator training Zimbabwean scholars in conduct of clinical cardiovascular research

*Annual direct costs*: $500,000

UC Center for Women's Health Research Seed Grant PI: Kao 2015-6

Title: Identification and characterization of gender-specific heart failure phenotypes

The goal of this work is to combine primary data from completed heart failure studies to form a large aggregated data set for the purposes of identifying gender-specific heart failure phenotypes, associated clinical outcomes, and differential treatment response for the purposes of personalizing heart failure management.

*Role*: Principal Investigator

*Annual direct costs*: $25,000

American Heart Association CVGPS 15CVGPSD27090024 PI: Kao 2015-6

### Title: Characterization of molecular profiles in complex phenotypes associated with Heart Failure with Preserved Ejection Fraction

This study will identify genetic and gene expression features associated with divergent phenotypes of heart failure with preserved ejection fraction (HFpEF) to better understand the pathogenesis of HFpEF and identify potential novel therapeutic targets for future study. [link](https://newsarchive.heart.org/discovering-gene-culprits-could-speed-heart-failure-treatment-prevention/)

*Role*: Principal Investigator

*Annual direct costs*: $145,000

Agency for Healthcare Research and Quality R21 HS024124 PI: Meguid 2015-7

Title: Surgical Risk Preoperative Assessment System (SURPAS)

This is a proposal to develop tools to provide quantitative estimates of operative mortality and morbidity preoperatively to the patient, family, and the surgical team based on the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) database at the University of Colorado Hospital (UCH). [link](https://projectreporter.nih.gov/project_info_description.cfm?aid=8954888&icde=50329191&ddparam=&ddvalue=&ddsub=&cr=1&csb=default&cs=ASC&pball=)

*Role*: Co-Investigator

*Annual direct costs*: $100,000

### Fogarty International Center R25 TW010009 PI: Hakim 2015-8

Title: Promote Research through ICT Excellence (PRICE)

The goal of this work is to establish local expertise and create educational resources to train future clinical researchers at University of Zimbabwe in use of information and communication technology including mobile devices to conduct clinical research. [link](https://projectreporter.nih.gov/project_info_description.cfm?aid=8848579)

*Role*: Co-investigator/Primary Site Investigator

*Annual direct costs*: $100,000

Centers for Disease Control NU50DD004935 PI: Crume 2015-9

Title: Surveillance of Congenital Heart Defects Across the Lifespan

A team of epidemiologists, health informaticists, adolescent and adult congenital heart disease cardiologists with support from public health institutions in Colorado including the Colorado Department of Health and Environment (CDPHE) will develop a state-wide population-based surveillance system of CHDs among individuals aged 11-64. In addition, we will conduct extended surveillance of low-income adolescents and adults who receive care from a safety-net provider network. [link](https://taggs.hhs.gov/Detail/AwardDetail?arg_AwardNum=NU50DD004935&arg_ProgOfficeCode=281)

*Role*: Co-investigator

*Annual direct costs*: $450,000

UC SOM Dean’s Transformational Center Award PI: Kahn/Ho 2016-7

Title: Data Driven Decisions and Discovery

The purpose of this award is to combine enterprise clinical data warehousing, robust data science methods, implementation science and outcomes analysis to identify and disseminate high-value care practices across a large health system. [link](https://www.ucdenver.edu/academics/colleges/medicalschool/programs/d2V/Pages/D2V.aspx)

*Role*: Co-lead, Informatics Core

American Heart Association 17IG33660301 PI: Kao 2017-9

Title: Aggregate Data to Accelerate Personalizing Treatment of Heart Failure (ADAPT-HF)

The purpose of this award is to develop methods and technical infrastructure for harmonizing clinical trial data using standardized terms in order to support data mining analysis. [link](https://app.dimensions.ai/details/grant/grant.100057017)

*Role*: Principal Investigator

*Annual direct costs*: $80,000

American Heart Association 18UNPG34030044 PI: Görg 2018-9

Title: Analyzing Data to Accelerate Personalization of Treatment using Interactive Visual Exploration - Heart Failure (ADAPTIVE-HF)

The goals of this proposal are the development and deployment of interactive tools for data exploration and data mining in the AHA’s Precision Medicine Platform to enable characterization and prediction of survival and treatment response of patients from 19 completed heart failure clinical trials, and ultimately accelerate the personalization of treatment.

*Role*: Co-investigator

*Annual direct costs*: $150,000

UC SOM Dean’s Transformational Center Award PI: McKinsey 2016-20

Title: Center for Fibrosis Research and Translation

This award will create a center of excellence including faculty, pilot grants, and physical resources to study similarities and differences in characteristics of fibrosis across tissues from multiple organs with the intent of identifying novel pharmacologic therapies. [link](https://medschool.cuanschutz.edu/consortium-for-fibrosis-research-translation)

*Role*: Informatics lead

American Heart Association 16SFRN29580008 PI: Buttrick 2016-20

Title: A Comprehensive Approach to the Treatment of Heart Failure with Reduced Ejection Fraction

This proposal includes three complementary research projects all focused on gaps in our knowledge of HFrEF. Project 1 seeks to identify new therapeutic targets for heart failure and will focus on the role of histone deacetylase inhibition (HDAC-I) and the linked bromodomain proteins. Project 2 focuses on the cellular mechanisms by which patients with dilated, non-ischemic cardiomyopathy fail to respond to beta blocker therapy. Project 3 focuses on the difficulty in treating patients with optimal, evidence-based therapy. [link](https://professional.heart.org/-/media/phd-files/research/aha-research-accomplishments/american_heart_association_awardees_by_program_type_strategically_focused_research_networks.pdf?la=en)

*Role*: Co-investigator

American Heart Association 18IDHP34660267 PI: Musen 2018-20

Title: Clinical Trials Data to Drive Precision Management of Cardiovascular Disease

The purpose of this award is to develop technology and infrastructure in the AHA’s cloud-based Precision Medicine Platform to support harmonization of patient- and study-level data/metadata to support secondary analysis of clinical trial data hosted by the NHLBI’s BioLINCC resource.

*Role*: Site/Co-Investigator

*Annual direct costs*: $150,000

**Clinical Practice**

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| Certification and Licensure  |  |
| *Do* ***not*** *list DEA or license numbers.* |
| Diplomate, American Board of Internal Medicine | 2006-16 |
| Diplomate, Cardiovascular Disease, American Board of Internal Medicine | 2018-28 |
| *State Medical Licenses*: Colorado: 2008-presentCalifornia: 2003-2009, 2018-2020 |  |
| Clinical Discipline  |  |
| *Describe your clinical discipline and any areas of specialization* |
| Internal Medicine, General Cardiology | 2003- |
| General Cardiology | 2015- |
|  |  |
| Clinical Activities  |  |
| *List your clinical activities at all locations. Include type of activity (e.g., surgery, ambulatory care) and frequency (e.g., sessions/week; weeks/year).* |
| General Cardiology, University of Colorado Health, Aurora, CO | 2015- |

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| **Clinical Innovations and Quality Improvement Projects** |  |
| *Describe innovations in clinical care and quality improvement projects* ***not listed elsewher****e(e.g., under publications and presentations)* |
| Physician informaticist, Advanced Clinical Decision SupportUniversity of Colorado Health, Aurora, COThe purpose of this program is to develop and use a framework for implementation of real-time complex decision support applications across the entire University of Colorado Health system, currently 5 hospitals and 400+ outpatient clinics. | 2012- |
| Co-chairman, Pharmacogenomics Implementation Committee of Colorado, Colorado Center for Personalized Medicine, Aurora, COThis is a joint effort between CCPM, School of Pharmacy, School of Medicine, and UC Health to transfer pharmacogenomic data generated by CCPM to UC Health's Epic EMR for point-of-care pharmacogenetic decision support.  | 2016- |

Impact metrics:

*Publons*: h-index = 17 <https://publons.com/researcher/2605985/david-p-kao>

*Google Scholar*: h-index = 22 <https://scholar.google.com/citations?user=lAK-TRIAAAAJ&hl=en>

*ORCID*: <https://orcid.org/0000-0002-2832-9348>

*NCBI*: <https://www.ncbi.nlm.nih.gov/myncbi/david.kao.1/bibliography/public/>

*Mendeley*: h-index=19 <https://www.mendeley.com/profiles/david-kao2>

**Peer-reviewed publications**

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| --- |
| *Divide publications into categories as indicated below; list and number each category. Reverse chronological order is recommended but either order is acceptable. Only include articles that are published, in press, or accepted for publication. List all authors (do not use “et al.”). BOLD your name in the list of authors.* |

1. Swanson J, Dorward D, Lubke L, **Kao D**. Porin Polypeptide Contributes to Surface Charge of Gonococci. J Bacteriol. 1997;197(11):3541-3548. PMC179146. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC179146/)
2. Bos MP, **Kao D**, Hogan D, Grant C, Belland RJ. Carcinoembryonic Antigen Family Receptor Recognition by Gonococcal Opa Proteins Requires Distinct Combinations of Hypervariable Opa Protein Domains. Infect Immun. 2002;70(4):1715-1723. PMC127850. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC127850/)
3. Ziegelstein RC, Kim SY, **Kao D**, Fauerbach JA, McCann, U, Colburn J, Bush DE. Can Doctors and Nurses Recognize Depression in Patients Hospitalized with an Acute Myocardial Infarction in the Absence of Formal Screening? Psychosom Med. 2005;67(3):393-7. [link](https://pubmed.ncbi.nlm.nih.gov/15911901/)
4. Dormady SP, Mariappan MR, **Kao D**, Gotlib J. Use of urine flow cytometry to verify relapse of Burkitt’s lymphoma in the genitourinary system. J Clin Oncol. 2006;24(27):4515-6. [link](https://pubmed.ncbi.nlm.nih.gov/16983121/)
5. Witteles RM, **Kao D**, Christopherson D, Matsuda K, Vagelos R, Schreiber D, Fowler MB. Impact of nesiritide on renal function in patients with acute decompensated heart failure and pre-existing renal dysfunction a randomized, double-blind, placebo-controlled clinical trial. J Am Coll Cardiol. 2007;50(19):1835-40. [link](https://pubmed.ncbi.nlm.nih.gov/17980248/)
6. **Kao DP**, Kohrt HE, Kugler J. Renal failure and rhabdomyolysis associated with sitagliptin and simvastatin use. Diabet Med. 2008;25(10):1229-30. PMC2602841. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2602841/)
7. **Kao DP**. What can we learn from drug marketing efficiency? BMJ. 2008;338:141-4. PMC3230247. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3230247/)
8. **Kao DP**, Witteles RM, Quon A, Wu JC, Gambhir SS, Fowler, MB. Rosiglitazone increases myocardial glucose metabolism in insulin-resistant cardiomyopathy. J Am Coll Cardiol. 2010;55(9):926-7. PMC3835683. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3835683/)
9. Yoon GJ, Telli ML, **Kao DP**, Matsuda K, Carlson RW, Witteles RM. Left ventricular dysfunction in patients receiving cardiotoxic cancer therapies: Are clinicians responding optimally? J Am Coll Cardiol. 2010;56(20):1644-50. PMC3835691. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2602841/)
10. **Kao DP**, Kreso E, Dale RA, Gonarow GC, Krantz MJ. Characteristics and outcomes among heart failure patients with anemia and renal insufficiency with and without blood transfusions (Public Discharge Data from California 2000-2006). Am J Card. 2011;107(1):69-73. PMC3835688. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3835688/)
11. Hakim JG, Matenga JA, Havranek E, **Kao DP**. Healthcare workforce development with a focus on CVD in Zimbabwe. Global Heart. 2011;6:219-220. PMC4354847. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4354847/)
12. **Kao DP**, Hiatt WR, Krantz MJ. Proarrhythmic potential of dronedarone: emerging evidence from spontaneous adverse event reporting. Pharmacotherapy 2012;32(8):767-71. PMC3463717. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3463717/)
13. **Kao DP**, Martin MH, Das AK, Ruoss SJ. Consequences of federal patient transfer regulations: effect of the 2003 EMTALA revision on a tertiary referral center and evidence of possible misuse. Arch Int Med. 2012;172(11):891-2. PMC3507997. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3507997/)
14. **Kao DP**, Wagner BD, Robertson AD, Bristow MR, Lowes BD. A personalized BEST: Characterization of latent clinical classes of nonischemic heart failure that predict outcomes and response to bucindolol. PLOS One. 2012:7(11):e48184. PMC3492337. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3492337/)
15. **Kao DP**, Davis G, Aleong R, O’Connor CM, Fiuzat M, Carson PE, Anand IS, Plehn JF, Gottlieb SS, Silver MA, Lindenfeld J, Miller AB, White M, Murphy GA, Sauer W, Bristow MR. Effect of bucindolol on heart failure outcomes and heart rate response in patients with reduced ejection fraction heart failure and atrial fibrillation. Eur J Heart Fail. 2013;15(3):324-33. PMC3576901. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3576901/)
16. **Kao DP**, Bucher Bartleson B, Khatri V, Dart R, Mehler PS, Katz D, Krantz MJ. Trends in reporting of methadone-associated cardiac arrhythmia events. Annals Int Med 2013; 158(10):735-740. PMC3793842. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3793842/)
17. **Kao DP**, Hsich E, Lindenfeld J. Characteristics, adverse events, and racial differences among delivering mothers with peripartum cardiomyopathy. JACC:Heart Failure 2013; 1(5):409-416. PMC3806506. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3806506/)
18. Katz DF, Sun J, Khatri V, **Kao DP**, Bucher Bartleson B, Traut C, Lundin-Martinez J, Goodman M, Mehler PS, Krantz MJ. QTc Interval screening in an Opioid Treatment Program. Am J Card 2013; 112(7):1013-8. PMC4361084. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4361084/)
19. Hinterberg MA, **Kao DP**, Bristow MR, Hunter LE, Port JD, Görg C. PEAX: Interactive Visual Analysis and Exploration of Complex Clinical Phenotype and Gene Expression Association. Pac Symp Biocomput 2015;20:419-30. PMC4344826. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4344826/)
20. Gapu P, Bwakura-Dangarembizi M, Kandawasvika G, **Kao DP**, Bannerman C, Hakim J, Matenga JA. Rheumatic fever and rheumatic heart disease among children presenting to two referral hospitals in Harare Zimbabwe. South African Medical Journal 2015;105(5):384-8. PMC7275821. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7275821/)
21. **Kao DP**, Lowes BD, Gilbert EM, Minobe W, Epperson LE, Meyer L, Ferguson D, Volkman K, Zolty R, Robertson AD, Borg D, Quaife R, Bristow MR. Therapeutic molecular phenotype of β-blocker associated reverse-remodeling in nonischemic dilated cardiomyopathy. Circ Cardiovasc Genet. 2015;8(2):270-83. PMC7205443. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7205443/)
22. Katz DF, Turakhia MP, Sauer WH, Tzou WS, Heath RR, Zipse MM, Aleong RG, Varosy PD, **Kao DP**. Safety of ventricular tachycardia ablation in clinical practice: findings from 9,699 hospital discharge records. Circ Arrhythm Electrophysiol 2015;8(2):362-70. [link](https://pubmed.ncbi.nlm.nih.gov/25688143/)
23. Vehlow C, **Kao DP**, Bristow MR, Hunter LE, Weiskopf D, Görg C. Visual analysis of biological data-knowledge networks. BMC Bioinformatics. 2015;16(1):135. PMC4456720. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4456720/)
24. **Kao DP**, Lindenfeld J, Macaulay D, Birnbaum HG, Jarvis JL, Desai US, Page RL. Impact of a telehealth and care management program on all-cause mortality and healthcare utilization in patients with heart failure. Telemedicine and eHealth. 2015;22(1):2-11. PMC4739127. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4739127/)
25. **Kao DP**, Haigney MCP, Mehler PS, Krantz MJ. Arrhythmia associated with Buprenorphine and Methadone Reported to the Food and Drug Administration. Addiction. 2015; 110(9):1468-75. PMC4521976. [link](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4521976/)
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67. Stevens LM, Linstead E, Hall JL, **Kao DP**. The association between coffee intake and incident heart failure risk – a machine learning analysis of the Framingham Heart, Atherosclerosis Risk in Communities, and Cardiovascular Health Studies. Circ Heart Fail. 2020 [in press].
68. Tillman AR, Colborn KL, Scott KA, Davidson AJ, Khanna A, **Kao D**, McKenzie L, Ong T, Rausch CM, Duca LM, Daley MF, Coleman S, Costa 3rd E, Fernie E, Crume TL. Associations between socioeconomic context and congenital heart disease related outcomes in adolescents and adults. Am J Cardiol. 2020. [in press]. [link](https://pubmed.ncbi.nlm.nih.gov/33203514/)
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71. Davis MB, Jarvie J, Gambahaya E, Lindenfeld J, **Kao D**. Risk prediction for peripartum cardiomyopathy in delivering mothers: a validated risk model. J Card Fail. 2021 [in press].

**Book chapters**

1. **Kao D**, Daniels D, Ashley E.  Heart Failure.  In Daniels, Rockson, Vagelos (Eds.)  *Concise Cardiology* Philadelphia: Lippincott Williams & Wilkins. 2008:129-150. [link](https://books.google.com/books?id=3MljFfuGaxkC&pg=PR7&lpg=PR7&dq=Concise+Cardiology+daniels+kao&source=bl&ots=iBvgQSqb-7&sig=ACfU3U2Dq_Bn00ZDksIayKhbdeT0L-eNNg&hl=en&sa=X&ved=2ahUKEwic3uHu1qjsAhWBXM0KHfpzCFMQ6AEwEXoECAYQAg#v=onepage&q=Concise%20Cardiology%20daniels%20kao&f=false)
2. Moore PK, **Kao D**, Krantz M. Cardiovascular consequences of addiction. In el-Guebaly et al. *Textbook of Addiction Treatment: International Perspectives*: Springer-Verlag. 2014. [link](https://link.springer.com/referenceworkentry/10.1007/978-88-470-5322-9_78)

**Invited Presentations**

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| ***List presentations that you were invited to give at institutions (e.g., research seminars or grand rounds) or professional meetings (e.g., plenary or keynote talks, seminar sessions). List the institution or name of meeting, location and date. Divide by location: see the CV Guide for definition of local, regional, national.*** |
| National |  |
| Opioid Agonists & Cardiac Safety: Pharmacovigilance & ECG Implementation. American Association for the Treatment of Opioid Dependence National Conference, Philadelphia, PA. | 11/2013 |
| 1. Phenotyping HFpEF. American Heart Association Scientific Sessions 2015, Orlando, FL
 | 11/2015 |
| 1. Automation: Electronic Health Records to Coordinate Inpatient and Transitional Care. American Heart Association Scientific Sessions 2015, Orlando, FL
 | 11/2015 |
| 1. State of the Art in Data Warehousing, High Throughput Analytics, and Point-of-Care Decision Support. American Heart Association Scientific Sessions 2015, Orlando, FL
 | 11/2015 |
| The Future of EHR – Opportunities and Challenges. American Heart Association Scientific Sessions 2015, Orlando, FL | 11/2015 |
| Phenotyping Heart Failure with Preserved Ejection Fraction, 12th Global Cardiovascular Clinical Trialists Forum 2015, Washington DC. | 10/2015 |
| Personalizing Heart Failure Management From Population to Gene Expression Through Applied Informatics, Oregon Health Sciences University, Portland, OR | 9/2015 |
| 1. Using Medical Claims Data for Precision Medicine Research, Merck Inc., North Wales, PA.
 | 10/2017 |
| 1. Complex phenotyping in patients with heart failure with preserved ejection fraction: understanding etiology and personalizing management – University of Colorado Center for Women’s Health Research National Conference on Women’s Health Research, Denver, CO
 | 9/2018 |
| 1. From How to Wow: Strategies to Convey Research Results. AHA Quality of Care and Outcomes Research Scientific Sessions, 2020 (virtual).
 | 5/2020 |
| 1. Accelerating Adoption: The Case for Faster AI Implementation: Pro. AHA Quality of Care and Outcomes Research 2020 Scientific Sessions (virtual).
 | 5/2020 |
| 1. Benefits and challenges using electronic medical records. 17th Global Cardiovascular Clinical Trialists Forum (virtual).
 | 12/2020 |
| Local |  |
| 1. Heart Failure Research in the Age of Amazon. Annual Fundraising Luncheon, Center for Women’s Health Research, University of Colorado School of Medicine, Denver, CO
 | 9/26/2013 |
| 1. Using Big Data to Personalize Management of Heart Failure: Finding Barney Gumble, Cardiology Research Conference, University of Colorado School of Medicine, Aurora, CO
 | 2/28/2015 |
| 1. Big Data in Health Care and Academic Medicine - Analytics in Decision Making – What is Happening at Anschutz? University of Colorado School of Medicine, Aurora, CO.
 | 10/4/2016 |
| 1. Personalized Medicine in Practice: Opportunities, Resources, and Strategies 13th Annual Women’s Health Symposium, Center for Women’s Health Research, University of Colorado School of Medicine, Aurora, CO
 | 4/19/2017 |
| 1. Let’s Talk: Precision Medicine – Where are we and where are we going? Center for Women’s Health Research, UCHealth, Aurora, CO
 | 12/1/2017 |
| 1. Personalizing Medicine at UCH: Cardiology at the Forefront, Division of Cardiology Grand Rounds, University of Colorado School of Medicine, Aurora, CO
 | 12/4/2017 |
| 1. Breaking Bad… Hemodynamics – Methamphetamine cardiomyopathy case presentation. Colorado Heart Failure Summit, Colorado Springs, CO
 | 12/13/2018 |

## Peer-Reviewed Presentations, Posters & Abstracts

## Oral presentations

1. **Kao DP**, Hsich E, Lindenfeld J. Characteristics of 1994 patients hospitalized with peripartum cardiomyopathy. Annual Scientific Session & Expo of Am Coll Cardiol. J Am Coll Cardiol. 2012:59(13S):E1572
2. **Kao DP**, Katz DE, Bucher-Bartleson B, Mehler P, Krantz MJ. Methadone-associated ventricular arrhythmia fatalities reported to the FDA from 1969-2011. Heart Rhythm Society Scientific Sessions. Heart Rhythm 2012:9(5S):AB40-05.
3. **Kao DP**, Lewsey JK, Massie BM, McMurray J, Carson PE, Anand IS, Lindenfeld J. Characterization of heart failure patients with preserved ejection fraction in the I-PRESERVE trial who have improved outcomes with irbesartan therapy. European Society of Cardiology Heart Failure Congress. Eur J Heart Fail. 2012;11(Suppl 1):S4.
4. Page RL, **Kao DP**, Macaulay D, Birnbaum H, Desai U, Lindenfeld J. Integrated telehealth and care management program reduces all-cause mortality in Medicare beneficiaries with heart failure. American Heart Association Annual Scientific Sessions. Circulation. 2012:126:A14767.
5. **Kao DP**, Epperson LE, Karimpour-Fard, Gilbert EM, Lowes BD, Hunter LE, Bristow MR. Transcription of Select Homeobox Genes Increases in Patients with Heart Failure-Reduced Ejection Fraction Who Have Improvements in Left Ventricular Ejection Fraction on β-blocker Therapy. American Heart Association Annual Scientific Sessions. Circulation. 2012:126:A14777.
6. **Kao DP**, Varosy P, Aleong R. Impact of payor status on presentation, therapies, and outcomes in 31,614 patients hospitalized with Wolff-Parkinson-White Syndrome. American Heart Association Annual Scientific Sessions. Circulation. 2012:126:A14800.
7. Hinterberg M, **Kao DP**, Karimpour-Fard A, Sucharov K, Hunter LE, Port JD, Bristow MR. Myocardial expression of the microRNA dre-mir-133a-5p is associated with improvement in left ventricular ejection fraction in patients with idiopathic dilated cardiomyopathy treated with β-blockers. Annual Scientific Session & Expo of Am Coll Cardiol. J Am Coll Cardiol. 2013;61(10 Suppl):E714.
8. Krantz MJ, Traut C, **Kao DP**. Opioid Agonists & Cardiac Safety: Pharmacovigilance & ECG Implementation. American Association for the Treatment of Opioid Dependence National Conference, Nov. 11, 2013.
9. Epperson LE, **Kao DP**, Minobe W, Gilbert EM, Lowes BD, Bristow MR. Gene Expression Changes Associated with β-blocker reverse remodeling in the failing human heart constitute a β1-adrenergic receptor gene regulatory network. American Heart Association Scientific Sessions. Circulation. 2013;128:A18127.
10. Aleong RG, Tompkins C, Varosy PD, Katz DF, Schuller JL, Nguyen D, Tzou WS, Sung RK, Sauer WH, **Kao DP**. Risk score to predict adverse events in 57,220 patients undergoing lead extraction. Heart Rhythm Society Scientific Sessions. Heart Rhythm 2015;12(5 Suppl):AB08-02.
11. Aleong RG, Tompkins C, Varosy PD, Tzou WS, Katz DF, Schuller JL, Sung RK, Nguyen D, Sauer WH, **Kao DP**. Analysis of outcomes in 8304 patients undergoing lead extraction for infection. Heart Rhythm Society Scientific Sessions. Heart Rhythm 2015;12(5 Suppl):AB08-04.
12. Gambahaya ET, Fana GT, **Kao DP**, Hakim JG, Matenga J. Clinical characteristics and long-term outcome of peripartum cardiomyopathy in a resource limited setting. European Society of Cardiology Heart Failure Congress. Eur J Heart Fail 2016;18(Suppl 1):628.
13. Doran B, Roeder C, Merrill M, Jhund P, Stevens L, McMurray J, Görg C, **Kao DP**. Latent cluster analysis using clinical and functional characteristics identifies novel phenotypes of patients with reduced ejection ration enrolled in the HF-ACTION trial with differential association with mortality. American Heart Association Scientific Sessions. Circulation 2018;138(Suppl 1):A12890.
14. Riordan M, **Kao DP**. Clinical phenotype differences in outcomes and responses in spironolactone in heart failure with preserved ejection fraction. American Heart Association Scientific Sessions, November 2020 (virtual).

## Poster presentations

1. **Kao DP**, Pavlovic A, Fowler MB, Das AK. The Heart Failure Origin & Ontology Task (HOOT) Project – Using Ontology Development to Categorize and Analyze Clinical Data with Nonischemic Dilated Cardiomyopathy. AMIA Summit on Translational Bioinformatics, March 12-15, 2008, San Francisco, CA.
2. Telli ML, Yoon G, **Kao D**, Matsuda K, Witteles RM. Left ventricular dysfunction in patients receiving cardiotoxic cancer therapies: Are clinicians responding appropriately? Poster presentation at 58th Annual Scientific Meeting of the American College of Cardiology, March 29-31, Orlando, FL. J Am Coll Cardiol 2009;53(10 Suppl 1):A144-A197.
3. **Kao DP**, Kreso E, Fonarow G, Krantz M. Anemia, Kidney Disease, and Inpatient Outcomes for Heart Failure in California 2000-2006. 13th Annual Scientific Meeting of the Heart Failure Society of America, Sept 13-16, 2009; Boston, MA. J Card Fail 2009:15(6S):S102-3.
4. **Kao DP**, Raff H, Peterson P. Gender Differences in Use of Implantable Cardiac Defibrillators and Resynchronization Therapy for Heart Failure in California, 2000-2006. 13th Annual Scientific Meeting of the Heart Failure Society of America, Sept 13-16, 2009; Boston, MA. J Card Fail 2009:15(6S):S79-80.
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