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Education and Training

Education

08/1998-05/2002 BS in Neuroscience, *summa cum laude*, Vanderbilt University, Nashville, TN

08/2002-05/2007 MD, Washington University School of Medicine, St. Louis, MO

08/2011-05/2015 PhD in Health Policy (Evaluative Sciences and Statistics concentration), Harvard University, Cambridge, MA

Postdoctoral training

07/2007-06/2010 Residency in Pediatrics, Boston Combined Residency Program (Boston Children's Hospital and Boston Medical Center), Boston, MA

07/2010-06/2010 Postdoctoral Research Fellow, Harvard Pediatric Health Services Research Fellowship, Boston, MA

Certification and Licensure

Certification

10/2010-present American Board of Pediatrics, Certificate #96996

Licensure

07/2010-06/2015 State of Massachusetts, License #242746

06/2015-09/2017 State of Illinois, License #036.138203

10/2017-present State of Michigan, License #4301113525

Work Experience

Academic

07/2015-09/2017 Assistant Professor of Pediatrics and Public Health Sciences, University of Chicago, Chicago, IL

10/2017-present Assistant Professor of Pediatrics, University of Michigan Medical School, Ann Arbor, MI

Clinical

- 07/2010-06/2015 Urgent Care Attending, Boston Children's Hospital Emergency Department, Boston, MA
- 07/2010-06/2015 Urgent Care Attending, South Shore Hospital Emergency Department, Weymouth, MA
- 10/2017-present Primary Care Physician, Department of Pediatrics, University of Michigan Medical School, Ann Arbor, MI

Research

- 07/2010-06/2012 Research Fellow, Boston Children's Hospital, Boston, MA

Non-Academic

- 07/2004-06/2005 Jack Rutledge Fellow, American Medical Student Association. Between my third and fourth year of medical school, I worked at the American Medical Student Association's national office in Reston, VA. I led the organization's efforts to ensure universal access to health care and to eliminate health care disparities.

Research Interests

As a practicing general pediatrician with doctoral training in health policy, I combine a clinical perspective with rigorous methods to conduct research that is relevant to children, families, and policymakers. The major area of my research is opioid prescribing and policy. In my studies, I have identified opioid prescribing patterns associated with prescription opioid overdose among adolescents and young adults prescribed opioids; documented excessive and inappropriate opioid prescribing to children and young adults undergoing tonsillectomy; assessed the prevalence of doctor and pharmacy shopping among patients prescribed opioids; and evaluated the effects of opioid prescribing limits for acute pain. In my career development award from the National Institute on Drug Abuse, I am testing whether decreasing the default number of doses for opioid prescriptions written in electronic health records systems can safely reduce excessively opioid prescribing to adolescents and young adults undergoing tonsillectomy. In other grant-funded work, I am evaluating the effects of policy interventions on opioid prescribing by dentists, who are one of the major sources of opioid prescriptions to adolescents and young adults.

A second area of my research is low-value care. For example, I translated recommendations from sources such as Choosing Wisely into 20 claims-based measures of low-value pediatric services. Using these measures and national claims data, I found that 9% of privately insured children and 11% of publicly insured children received at least one of the 20 low-value services in 2014. As another example, I created the first comprehensive ICD-10-CM-based system for assessing antibiotic overuse in administrative data. Using this scheme and 2016 national commercial claims, I found that 23% of antibiotic prescriptions written to privately insured children and non-elderly adults are inappropriate.

A third area of my research is prescription drug policy. In one study, I demonstrated that annual out-of-pocket spending on the EpiPen increased by 123% between 2007 and 2014 among commercially insured patients due to price increases during this period. I have also conducted several studies on orphan drugs, which are particularly important in pediatrics because children are disproportionately affected by rare diseases. My research has estimated out-of-pocket spending on orphan drugs and assessed the number and nature of pediatric orphan indications approved between 2010 and 2018.

Grants

Current Grants

National Institute on Drug Abuse (1K08DA048110-01)

Using Default Opioid Prescription Settings to Limit Excessive Opioid Prescribing to Adolescents and Young Adults

PI: Kao-Ping Chua

05/2019-04/2024

Role: PI (75% effort)

\$911,520

Benter Foundation

U.S. Dental Opioid Prescribing: Epidemiology and Policy Interventions

PI: Chad Brummett

03/2020-02/2022

Role: Co-Investigator (9.5% effort)

\$1,095,045

Janette Ferrantino Award (University of Michigan)

A National Profile of Opioid Prescribing to Children

PI: Kao-Ping Chua

05/2018-05/2020

Role: PI (0% effort)

\$40,000

Gorman Scholar Award (University of Michigan)

Naloxone Prescribing to Adolescents and Young Adults at High Risk of Overdose

PI: Kao-Ping Chua

01/2019-10/2021

Role: PI (0% effort)

\$30,000

Past Grants

Institute for Health Policy and Innovation (University of Michigan)

Design and Implementation Problems for Opioid Prescribing Limits for Acute Pain

PI: Kao-Ping Chua

11/2018-04/2019

Role: PI

\$10,000

Academic Pediatric Association Young Investigator Award

Predictors of Overuse in Pediatrics

PI: Kao-Ping Chua

03/2017-04/2019

Role: PI

\$8,697

Institute for Translational Medicine Pilot Grant (University of Chicago)

Use of Low-Value Pediatric Services in the Medicaid Population

PI: Kao-Ping Chua

06/2016-06/2017

Role: PI

\$32,575

NIH Loan Repayment Program (Health Disparities)

The Effect of Health Insurance Loss on Health Outcomes at Age 19

PI: Kao-Ping Chua

07-2011-06/2013

Role: PI

NRSA T32 training grant (NRSA T32-HS00063)

Harvard Pediatric Health Services Research Fellowship

PI: Jonathan Finkelstein

07/2011-06/2013

Role: Trainee

Fred Lovejoy Resident Research and Education Award (Boston Children's Hospital)

Effect of Implementing a Night Team System on Resident Sleep/Work Hours

PI: Kao-Ping Chua

07/2009-06/2010

Role: PI

\$5,000

Honors and Awards

Institutional

1998-2002	Harold Stirling Vanderbilt Scholarship, Vanderbilt University (full-tuition academic scholarship)
2002	Runner-up for Founder's Medal, Vanderbilt University (award for the top student in the College of Arts & Sciences)
2002-2007	Distinguished Student Scholarship, Washington University School of Medicine (full-tuition academic scholarship)
2004	Harrison Scholar, Washington University School of Medicine (award for the top medical students in internal medicine)
2007	George F. Gill Prize in Pediatrics, Washington University School of Medicine (award for the top medical students in pediatrics)

2019 Faculty Award for Health Services Research, Department of Pediatrics, University of Michigan Medical School

National

2017 Academic Pediatric Association Young Investigator Award

Memberships in Professional Societies

2007-present American Academy of Pediatrics
2010-present AcademyHealth
2014-present Academic Pediatric Association
2015-present Society for Pediatric Research, Junior Section

Editorial Positions, Boards, and Peer-Review Services

Editorial Board

2019-present *Medical Care Research and Review*

Journal Reviewer

2014-present *Milbank Quarterly*
2014-present *Journal of Adolescent Health*
2015-present *Health Services Research*
2015-present *The Journal of Pediatrics*
2016-present *Medical Care*
2017-present *Public Health Reports*
2017-present *American Journal of Public Health*
2018-present *Medical Care Research and Review*
2018-present *Academic Pediatrics*
2018-present *Pediatrics*
2018-present *Journal of Addictive Diseases*
2018-present *JAMA Network Open*
2019-present *Addiction*
2019-present *JAMA*
2019-present *BMJ*
2019-present *Journal of the American Academy of Child and Adolescent Psychiatry*
2019-present *JAMA Pediatrics*
2019-present *PLoS Medicine*
2020-present *BMC Health Services Research*

Teaching

Trainees

2016 Elizabeth Tung, M.D., General Internal Medicine Fellow, Section of General Internal Medicine, Department of Medicine, University of Chicago. **Role:** Master's thesis advisor.

2016	Olga Kantor, M.D., General Surgery Resident, University of Chicago. Role: Master's thesis advisor.
2017	Joyce Woo, M.D., Pediatrics Resident, Comer Children's Hospital, University of Chicago. Role: Master's thesis advisor.
2019-present	Anna Volerman, M.D., Assistant Professor, Department of Medicine and Department of Pediatrics, University of Chicago. Role: Master's thesis advisor.

Teaching Activities

2013	Harvard Kennedy School Teaching Fellow. Course: "Quantitative Analysis and Empirical Methods." One semester, 20 lectures, 50 Masters of Public Policy graduate students
2015-2017	Pritzker School of Medicine Guest Lecturer ("Health Insurance 101") Course: The American Health Care System. 1 lecture, 80 first-year medical students
2015-2017	Pritzker School of Medicine Guest Lecturer ("Regression Analysis") Course: Introduction to Medical Evidence. 2 lectures, 80 first-year medical students.
2019	National Clinical Scholars Program core seminar series lecture ("Measuring Low-Value Pediatric Care"). 1 lecture, 12 master's students.
2019	Group Facilitator for University of Michigan Massive Open Online Course "Understanding and Improving the U.S. Health Care System." 1 session, 30 health professional students.
2019-present	Core Faculty for CHEAR Health Services Research Fellowship, Department of Pediatrics, University of Michigan Medical School

Committee, Organizational, and Volunteer Services

Committees/Boards

2017-present	Institute for Healthcare Policy and Innovation, University of Michigan, Member
2017-present	University of Michigan Injury Center, University of Michigan, Member
2018-present	Center for Study of Drugs, Alcohol, Smoking and Health, University of Michigan, Faculty Affiliate
2018-present	Institute for Research on Women and Gender, University of Michigan, Faculty Affiliate

2019 Faculty Coordinator, CHEAR Health Services Research Seminar Series

Volunteer services

2019-present Abstract Reviewer, Pediatric Academic Societies Meeting

2020-present Abstract Reviewer, Pediatrics Research Day, University of Michigan Medical School

Seminars, Visiting Professorships, and Extramural Invited Presentations

Seminars

1. Why should we care about low-value pediatric care? University of Michigan Department of Pediatrics Grand Rounds, Ann Arbor, MI, April 2018.

Extramural invited presentations

1. Differences in health care access and utilization between older adolescents and young adults with asthma. Transition to Adult Care Conference, Brigham and Women's Hospital, Boston, MA, May 2013.
2. Defining and measuring overuse in pediatrics. Dartmouth University Department of Pediatrics Grand Rounds, Hanover, NH, October 2017.
3. Why should we care about low-value pediatric care? University of Chicago Advancing Pediatric Quality Symposium, Chicago, IL, November 2018.
4. Improving the safety of opioid prescribing to adolescents and young adults. Symposium co-chair and speaker, Pediatric Academic Societies 2019 Annual Meeting, Baltimore, MD, April 2019.
5. Congressional testimony before the U.S. House of Representatives House and Energy Committee, Health Subcommittee: "Improving Safety and Transparency in America's Food and Drugs", January 2020

Selected media coverage

1. Levey N. Young adults healthier after passage of Obamacare, study finds. *LA Times*, June 17, 2014.
2. Schencker L. 1 in 10 kids got unneeded medical services in 2014, U of C study says. *Chicago Tribune*, December 8, 2016.
3. Rapaport L. Another look at the surge in EpiPen costs. *Reuters Health*. March 27, 2017.
4. Cohen R. EpiPens should work at least a while past expiration dates. *Reuters Health*. May 8, 2017.

5. Bhattacharjee, P. Doctors are still prescribing codeine for kids after tonsillectomy, despite FDA warning. *CNN*. November 16, 2017.
6. Jochem G. Getting doctors to stop prescribing codeine to kids has taken years. *NPR*. November 16, 2017.
7. Newman K. Nearly 1 in 4 antibiotic prescriptions are inappropriate. *US News and World Report*, January 16, 2019.
8. Giardano R. Opioids are overprescribed for children who get their tonsils out, study finds. *Philadelphia Inquirer*. August 8, 2019.
9. Preidt R. Teen opioid users face same OD risks as adults. *US News and World Report*. December 16, 2019.
10. Jagannathan M. An alarming number of kids get unnecessary medical care, including antibiotics and cervical-cancer screenings. *MarketWatch*. Jan 8, 2020.
11. Henry M. EpiPens still costly despite generic alternatives, other reforms. *The Columbus Dispatch*. February 9, 2020.

Bibliography

Peer-Reviewed Publications

1. **Chua KP**, Chun MM. Implicit scene learning is viewpoint dependent. *Perception & Psychophysics*. 2003;65(1):72-80. PMID: 12699310
2. Kelley TA, Chun MM, **Chua KP**. Effect of scene inversion on change detection of targets matched for visual salience. *J Vis*. 2003;3(1):1-5. PMID: 12678620
3. **Chua KP**, Gordon MB, Sectish TC, Landrigan CP. Effects of a night team system on resident sleep and work hours. *Pediatrics*. 2011;128(6):1142-1147. PMID: 22123867
4. **Chua KP**, Schuster MA, McWilliams JM. Differences in health care access and utilization between older adolescents and young adults with asthma. *Pediatrics*. 2013;131(5):892-901. PMID: 23610211. PMCID: PMC4074656
5. **Chua KP**, Sommers BD. Changes in health and medical spending among young adults under health reform. *JAMA*. 2014;311(23):2437-2439. PMID: 24938568
6. **Chua KP**, Neuman MI, McWilliams JM, Aronson PL. Association between clinical outcomes and hospital guidelines for cerebrospinal fluid testing in febrile infants aged 29-56 days. *J Pediatr*. 2015; 167:1340-1346.e9. PMID: 26477870. PMCID: PMC5535778
7. Sommers BD, **Chua KP**, Kenney JM, Long SK, McMorro S. California's early coverage expansion under the Affordable Care Act: a county-level analysis. *HSR*. 2016; 51(3):825-845. PMID: 26443883. PMCID: PMC4874826

8. Tung EL, Baig AA, Laiteerapong N, Huang ES, **Chua KP**. Racial and ethnic disparities in diabetes screening between Asian Americans and other adults. *J Gen Intern Med*. 2016;32(4):423-429. PMID: 27848187. PMCID: PMC5377880
9. **Chua KP**, Schwartz AL, Volerman A, Conti RM, Huang ES. Use of low-value pediatric services among the commercially insured. *Pediatrics*. 2016; 138(6): e20161809. PMID: 27940698. PMCID: PMC5127068
10. **Chua KP**, Conti RS. Out-of-pocket spending among commercially insured patients for epinephrine autoinjectors between 2007 and 2014. *JAMA Intern Med*. 2017; 177(5):736-739. PMID: 28346591. PMCID: PMC5377880
11. Trueger NS, **Chua KP**, Hussain A, Liferidge AT, Pitts SR, Pines JM. Incorporating alternative care site characteristics into estimates of substitutable ED visits. *Med Care*. 2017; 55(7):693-697. PMID: 28498199
12. **Chua KP**, Shrime MG, Conti RS. Effect of FDA investigation on opioid prescribing to children after tonsillectomy/adenoidectomy. *Pediatrics*. 2017;140(6): e20171765. PMID: 29146621
13. **Chua KP**, Conti RS. Out-of-pocket spending on orphan drug prescriptions among commercially insured adults in 2014. *J Gen Intern Med*. 2019;34(3):338-340. PMID: 30324293
14. McCabe SE, Wilens TE, Boyd CJ, **Chua KP**, Voepel-Lewis T, Schepis TS. Age-specific risk of substance use disorders associated with controlled medication use and misuse subtypes in the United States. *Addict Behav*. 2019; 90:285-293. PMID: 30472537
15. **Chua KP**, Fischer MA, Linder JA. Appropriateness of outpatient antibiotic prescribing among privately insured US patients: ICD-10-CM based cross sectional study. *BMJ*. 2019;364:k5092. PMID: 30651273. PMCID: PMC6334180
16. Harbaugh CM, Lee JS, **Chua KP**, Kenney B, Iwashyna TJ, Englesbe MJ, Brummett CM, Bohnert AS, Waljee JF. Association between long-term opioid use in family members and persistent opioid use after surgery among adolescents and young adults. *JAMA Surg*. 2019; Feb 27:e185838. PMID: 30810738
17. **Chua KP**, Brummett CM, Conti RC, Haffajee RL, Prosser LA, Bohnert ASB. Assessment of prescriber and pharmacy shopping in the family members of patients prescribed opioids. *JAMA Netw Open*. 2019; 2(5):e193673. PMID: 31074819.
18. **Chua KP**, Harbaugh CM, Brummett CM, Bohm LA, Cooper KA, Thatcher AI, Brenner MJ. Association of perioperative opioid prescriptions with risk of complications after tonsillectomy in children. *JAMA Otolaryngol Head Neck Surg* 2019 Aug 8. doi: 10.1001/jamaoto.2019.2107. [Epub ahead of print]. PMID: 31393537
19. Woo JL, Anderson BR, Gruenstein D, Conti RC, **Chua KP**. Minimum travel distance among publicly insured infants with severe congenital heart disease: potential impact of in-state restrictions. *Pediatr Cardiol*. 2019 Aug 28. doi: 10.1007/s00246-019-02193-1. [Epub ahead of print], PMID: 31463514

20. **Chua KP**, Brummett CM, Conti RM, Bohnert ASB. Association of opioid prescribing patterns with prescription opioid overdose in adolescents and young adults. *JAMA Pediatr* 2019 Dec 16; doi: 10.1001/jamapediatrics.2019.4878. [Epub ahead of print]. PMID: 31841589
21. Agarwal S, Bryan JD, Hu HM, Lee JS, **Chua KP**, Haffajee RL, Brummett CM, Engelsbe MJ, Waljee JF. Association of state opioid duration limits with postoperative opioid prescribing. *JAMA Netw Open* 2019 Dec 2;2(12):e1918361. doi: 10.1001/jamanetworkopen.2019.18361. [Epub ahead of print]. PMID: 31880801
22. **Chua KP**, Schwartz AL, Volerman A, Conti RM, Huang ES. Differences in the receipt of low-value services between publicly and privately insured children. *Pediatrics* 2020; pi: e20192325. doi: 10.1542/peds.2019-2325. PMID: 31911477. PMCID: PMC6993279.
23. Schuiteman S, **Chua KP**, Chang T. Self-management of health care among youth: implications for policies on transition of care. *J Adolesc Health* 2020 Feb 26; doi: 10.1016/j.adohealth.2020.01.009. [Epub ahead of print] PMID: 32113903
24. Harbaugh CM, Vargas G, Sloss KR, Bohm LA, Cooper KA, Thatcher AL, Zopf DA, **Chua KP**, Waljee JF, Gadepalli SK. Association of Opioid Quantity and Caregiver Education with Pain Control after Pediatric Tonsillectomy. *Otolaryngol Head Neck Surg.* 2020 Mar 24:194599820912033. doi: 10.1177/0194599820912033. [Epub ahead of print] PMID: 32204656
25. Kimmel L, Conti RM, Volerman A, **Chua KP**. Pediatric orphan drug indications: 2010-2018. *Pediatrics* 2020, doi: 10.1542/peds.2019-3128. PMID: 32127360

Viewpoints

1. **Chua KP**, Conti RS, Freed GA. Appropriately framing child health care spending – a pre-requisite for value improvement. *JAMA* 2018; 319(11):1087-1088. PMID: 29482195
2. **Chua KP**, Brummett CM, Waljee JF. Opioid prescribing limits for acute pain: potential problems with design and implementation. *JAMA.* 2019; 321(7):643-644. PMID: 30703214
3. **Chua KP**, Kimmel L, Brummett CM. Disappointing early results for opioid prescribing limits. *JAMA Surg.* 2020 Mar 11; doi: 10.1001/jamasurg.2019.5891. [Epub ahead of print]. PMID: 32159750.

Letters

1. **Chua KP**, Brummett CM, Waljee JF. Limiting Opioid Prescribing – Reply. *JAMA.* 2019; 322(2):171-172.
2. **Chua KP**, Harbaugh CM, Brenner MJ. Opioid prescriptions and risk of complications after tonsillectomy in children. *JAMA Otolaryngol Head Neck Surg.* 2020 146(2):209. PMID: 32077928

Blog posts

1. **Chua KP**. The challenges of developing healthcare quality measures based on ICD-10-CM Codes. *BMJ Opinion*, January 16, 2019.
2. **Chua KP**, Conti RS. Orphan drugs for opioid use disorder: an abuse of the Orphan Drug Act. *Health Affairs Blog*, July 26, 2019.
3. **Chua KP**, Conti RS. Revocation of orphan drug designation for extended-release buprenorphine injection: implications and next steps. *Health Affairs Blog*, March 5, 2020.
4. **Chua KP**, Conti RS. Despite the Families First Coronavirus Response Act, COVID-19 Evaluation is Not Necessarily Free. *Health Affairs Blog*, April 17, 2020.

Oral abstracts

1. **Chua KP**, Gordon MB, Sectish TC, Landrigan CP. Effects of implementing a night team system on resident sleep and work hours. Platform presentation, Pediatric Academic Societies 2010 Annual Meeting, Vancouver, British Columbia, Canada, May 2010.
2. **Chua KP**, Trueger NS, Hussain A, Liferidge AT, Pitts SR, Pines JM. Prevalence and predictors of substitutable ED visits by children. Platform presentation, Pediatric Academic Societies 2016 Annual Meeting, Boston, MA, May 2016.
3. **Chua KP**, Brummett CM, Conti RC, Haffajee RL, Prosser LA, Bohnert ASB. Doctor and pharmacy shopping among the family members of children prescribed opioids. Platform presentation, Pediatric Academic Societies 2019 Annual Meeting, Baltimore, MD, April 2019.
4. **Chua KP**, Conti RM. Orphan drug spending on orphan indications among the commercially insured. Platform presentation, AcademyHealth Annual Research Meeting, Washington, DC, June 2019
5. **Chua KP**, Linder JA. Prevalence of Inappropriate or Off-Label Azithromycin Prescribing to U.S. Children in 2017. Platform presentation, Pediatric Academic Societies 2020 Annual Meeting, Philadelphia, PA (conference canceled due to COVID-19).
6. Sharifi M, **Chua KP**. Underuse and Overuse of Screening Tests for Co-Morbidities among Children with Obesity. Platform presentation, Pediatric Academic Societies 2020 Annual Meeting, Philadelphia, PA (conference canceled due to COVID-19).
7. Dalziel K, **Chua KP**, Ryan AM, Freed GL, Levy H, Ayanian JZ. Association Between ACA Medicaid Expansion and Coverage for Low-Income Children. Platform presentation, Pediatric Academic Societies 2020 Annual Meeting, Philadelphia, PA (conference canceled due to COVID-19).

Posters

1. **Chua KP**, Conti RM. Opportunities to reduce codeine prescriptions to children. Pediatric Academic Societies 2018 Annual Meeting, Baltimore, MD, April 2019. Toronto, Canada.

2. **Chua KP**, Conti RM, Lee S, Mangione-Smith R. Disparities in chronic disease prevalence between publicly and commercially insured children. Pediatric Academic Societies 2019 Annual Meeting, Baltimore, MD, April 2019.
3. **Chua KP**, Schwartz AL, Volerman A, Conti RM, Huang ES. Differences in low-value pediatric service use between publicly and commercially insured children. Pediatric Academic Societies 2019 Annual Meeting, Baltimore, MD, April 2019.
4. **Chua KP**, Conti RM, Lee S, Mangione-Smith R. Claims-based algorithm to identify children with individual chronic conditions. AcademyHealth Annual Research Meeting, Washington, DC, June 2019
5. **Chua KP**, Schwartz AL, Volerman A, Conti RM, Huang ES. Differences in low-value pediatric service use between publicly and commercially insured children. AcademyHealth Annual Research Meeting, Washington, DC, June 2019
6. **Chua KP**, Brummett CM, Conti RC, Haffajee RL, Prosser LA, Bohnert ASB. Doctor and Pharmacy shopping among the families of patients prescribed opioids. AcademyHealth Annual Research Meeting, Washington, DC, June 2019