

Eric C Sun
Curriculum Vita (April 4, 2019)

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Personal

Licensure: Diplomate, American Board of Anesthesiology
Citizenship : United States

Education

2010 M.D., University of Chicago Pritzker School of Medicine
2008 Ph.D. (business economics), University of Chicago Booth GSB
2000 A.B. (molecular biology, with honors), Princeton University

Postgraduate Training

2011-2014 Resident, Department of Anesthesiology, Pain and Perioperative Medicine,
Stanford University
2010-2011 Intern, Santa Clara Valley Medical Center Transitional Program
2009-2010 AHRQ Postdoctoral Fellow, RAND at UCLA
2006-2008 Bing Center Fellow, RAND

Career/Academic Appointments

2019 Visiting Research Scholar, Melbourne Institute, University of Melbourne
2016- Assistant Professor, Department of Anesthesiology, Perioperative and Pain Medicine
and (by courtesy) Department of Health Research and Policy, Stanford University
2014-2016 Instructor, Department of Anesthesiology, Perioperative and Pain Medicine,
Stanford University
2008-2010 Associate Economist, RAND

Other Professional Positions

2006-present Consultant, Precision Health Economics
2004-2006 Lecturer, Department of Economics, University of Chicago
1996-2000 Research Assistant, Viral Epidemiology Branch, National Cancer Institute

Honors and Prizes

2018 Junior Faculty Research Award, Association of University Anesthesiologists
2016 Research Abstract Award, American Association of Pain Management

- 2011 Finalist, National Institute of Health Care Management Foundation Annual Research Award for “An Economic Evaluation of the War on Cancer” (published in the *Journal of Health Economics*)
- 2009-2010 AHRQ Postdoctoral Fellowship
- 2000-2010 National Institutes of Health Medical Scientist Training Program Fellowship

Professional Service

- Member, Committee on Anesthesia Workforce Trends, American Society of Anesthesiologists (2018-)
- Member, National Academies of Science, Engineering, and Medicine *ad hoc* Committee on Evidence-Based Clinical Practice Guidelines to Prescribing Opioids for Acute Pain (2018-)
- Member, Committee on Health and Public Policy, American Society of Anesthesiologists (2015-2017)

- Associate Editor, *Anesthesia and Analgesia* (2015-)
- Associate Editor, *Anesthesiology* (2019-)

Reviewer for *American Economic Review*, *American Journal of Managed Care*, *Annals of Internal Medicine*, *British Medical Journal*, *Circulation*, *Forums in Health Economics and Policy*, *Health Affairs*, *Journal of Health Economics*, *JAMA*, *JAMA Internal Medicine*, *JAMA Network Open*, *JAMA Oncology*, *Journal of Industrial Organization*, *New England Journal of Medicine*, *Pediatrics*

Funding

Current Funding

- 2017-2022 “The Epidemiology and Economics of Chronic Back Pain.” K Award from the National Institute on Drug Abuse, K08DA042314. (PI)
- 2018-2019 “Are the Mentally Ill Rational?” Seed Grant from the Center on the Demography and Economics of Health and Aging, Stanford University (PI).

Past Funding

- 2017-2018 Medicare Locality Payments and Physician Location Decisions. Seed Grant from the Center on the Demography and Economics of Health and Aging, Stanford University (PI).
- 2016-2017 Anesthesia Care Teams and Perioperative Outcomes. Research Grant from the American Society of Anesthesiologists. (PI)
- 2014-2016 The Economics of Chronic Pain. Mentored Research Training Grant from the Foundation for Anesthesia Education and Research. (PI)
- 2008 An Economic Evaluation of the War on Cancer. Genentech, Inc. (PI)
- 2008 The Welfare Effects of Regulating Pharmaceutical Safety. RAND Institute for Civil Justice. (PI)
- 2008 The Effects of Regulating Administrative Costs in California. California Healthcare Foundation. (Co-Investigator)
- 2008 The Effect of BTC/OTC Switches on Drug Utilization, Prices, and Health. Assistant Secretary for Planning and Evaluation, Department of Health and Human Services. (Co-Investigator)

Peer Reviewed Papers

1. **Sun EC**, Goedert JJ, Fears, TR: Epidemiology of squamous cell conjunctival cancer. *Cancer Epidemiology, Biomarkers, and Prevention*. 1997; 6:73-77.
2. **Sun EC**, Curtis R, Hankey B, Melbye M, Goedert JJ: Salivary Gland Cancer in the United States. *Cancer Epidemiology, Biomarkers, and Prevention*. 1999; 8:1095- 1100.
3. Philipson, TJ, Berndt E, Gottschalk A, **Sun, EC**: Cost-Benefit Analysis of the FDA: The Case of the Prescription Drug User Fee Acts. *Journal of Public Economics*. 2008; 92:1306-1325
4. Goldman DP, Jena AB, Philipson TJ, **Sun EC**: Drug Licenses: A Promising Model of Pharmaceutical Pricing. *Health Affairs*. 2008; 27:122-129.
5. Joyce GF, Goldman DP, Vogt WB, **Sun EC**, Jena AB: Medicare Part D After Two Years. *American Journal of Managed Care*. 2009; 15(8):536-544.
6. Goldman DP, Jena AB, Lakdawalla DN, Malin JL, Malkin JD, **Sun EC**: The Value of Specialty Oncology Drugs. *Health Services Research*. 2009; 45(1):115-132.
7. **Sun EC**, Lakdawalla D, Jena AB, Reyes C, Philipson TJ, Goldman D. Relative Contribution of Better Treatments and Improved Detection: An Analysis of Cancer Survival Gains from 1988-2000 Using SEER Data. *Forums in Health Economics and Policy*. 2010; 13(2): Article 1.
8. Lakdawalla D, **Sun EC**, Jena AB, Reyes CM, Goldman DP, Philipson TJ. An Economic Evaluation of the War on Cancer. *Journal of Health Economics* 2010; 29(3): 333-346.
9. Philipson TJ, **Sun, EC**, Goldman DP, Jena AB. A Re-examination of the Costs of Medical R&D Regulation. *Forums in Health Economics and Policy*. 2012; 15(3): 132-159.
10. Sood N, **Sun EC**, Zhou X. Behind-the-Counter Statins: A Silver Bullet for Reducing Costs and Increasing Access? *Health Services Research* 2012; 47(1):174-187
11. Jena AB, **Sun EC**, Goldman DP. Confounding in the Association of Proton Pump Inhibitor Use with Risk of Community Acquired Pneumonia. *Journal of General Internal Medicine*, 2013; 28(2):223-230.
12. Jena AB, **Sun EC**, Romley J. Mortality Among High Risk Patients with Acute Myocardial Infarction Admitted to U.S. Teaching Hospitals in July: A Retrospective Observational Study. *Circulation* 2013; 128(25):2754-2763.
13. Jena AB, **Sun EC**, Prasad V. Does the Declining Lethality of Gunshot Injuries Mask a Rising Epidemic of Gun Violence in the United States? *Journal of General Internal Medicine* 2014; 29(7): 1065-1069.
14. **Sun EC**, Baker LC. Concentration in Orthopedic Markets was Associated with a 7 Percent Increase in Physician Fees for Total Knee Replacements. *Health Affairs* 2015;34(6):916-921
15. **Sun EC**, Dexter F, Macario A, Miller TR, Baker LC. No Significant Association Between Anesthesia Group Concentration and Private Insurer Payments in the United States. *Anesthesiology* 2015;123:507-514.
16. **Sun EC**, Miller TR, Halzack N. "Opt out" States Show No Increase in Access to Anesthesia Services for Medicare Beneficiaries Compared to Non-"Opt out" States. *Anesthesia and Analgesia Case Reports* 2016;6(9):283-285.
17. **Sun EC**, Dexter F, Miller TR. The Effect of "Opt out" Regulation on Access to Surgical Care in the United States: Evidence from the National Inpatient Sample. *Anesthesia and Analgesia* 2016;122(6):1983-1991.
18. **Sun EC**, Darnall B, Baker LC, Mackey S. Incidence of and Risk Factors for Chronic Opioid Use Among Opioid Naïve Patients in the Perioperative Period. *JAMA Internal Medicine* 2016;176(9):1286-1293.
19. **Sun EC**, Dexter F, Miller TR, Baker LC. "Opt Out" and Access to Anesthesia Care for Elective and Urgent Surgeries Among US Medicare Beneficiaries. *Anesthesiology* 2017;126(3):461-471.

20. Tse BK, Walters TL, Howard SK, Kim TE, Memtsoudis SG, **Sun EC**, Kou A, Graham L, King R, Mariano ER. A Matched Case-Control Comparison of Hospital Costs and Outcomes for Knee Replacement Patients Admitted Postoperatively to Acute Care versus Rehabilitation. *Journal of Anesthesia* 2017;31(5):785-788.
21. Dexter F, Epstein RH, **Sun EC**, Lubarsky DA, Dexter EU. Readmission to Different Hospitals after Common Surgical Procedures and Consequences for Implementation of Perioperative Surgical Home Programs. *Anesthesia and Analgesia* 2017;125(3):943-951.
22. **Sun EC**, Dixit A, Humphreys KN, Darnall BD, Baker LC, Mackey S. Association Between Concurrent Use of Prescription Opioids and Benzodiazepines and Overdose: Retrospective Analysis. *BMJ* 2017;356:j760.
23. **Sun EC**, Bateman BT, Memtsoudis SG, Neuman MD, Mariano ER, Baker LC. Lack of Association Between the Use of Nerve Blockade and the Risk of Post-Operative Chronic Opioid Use among Patients Undergoing Total Knee Arthroplasty: Evidence from the Marketscan® Database. *Anesthesia and Analgesia* 2017;125(3):999-1007.
24. **Sun EC**, Bateman B, Memtsoudis SG, Neuman MD, Mariano ER, Baker LC. Lack of Association Between the Use of Nerve Blockade and the Risk of Post-Operative Chronic Opioid Use Among Patients Undergoing Total Shoulder Arthroplasty: Evidence from the Marketscan® Database. *Anesthesia and Analgesia* 2017;125(3):1014-1020.
25. **Sun EC**, Jena AB. Distribution of Prescription Opioid Use Among Privately Insured Cancer-Free Adults: US, 2001-2013. *Annals of Internal Medicine* 2017;167(9):684-686.
26. O'Connell C, Azad TD, Mittal V, Vail D, Johnson E, Desai A, **Sun EC**, Ratliff JK, Veeravagu A. Preoperative Depression, Lumbar Fusion, and Opioid use: An Assessment of Postoperative Prescription, Quality, and Economic Outcomes. *Neurosurgical Focus* 2018;44(1):E5.
27. Dexter F., Epstein RH, Dexter EU, Lubarsky DA, **Sun EC**. Hospitals with Briefer than Average Lengths of Stay for Common Surgical Procedures do not Have Greater Odds of Either Re-admission or Use of Short-Term Care Facilities. *Anaesthesia and Intensive Care* 2017; 45(2):210-219
28. Pichler L, Poeran J, Zubizarreta N, Cozowicz C, **Sun EC**, Mazumdar M, Memtsoudis SG. Association between Liposomal Bupivacaine Use and Perioperative Opioid Related Complications in Knee Arthroplasty Patients: A Population-Based Study. *Anesthesiology* 2018;129:689-699.
29. Ho PT, Carvalho B, **Sun EC**, Macario A, Riley ET. Cost-benefit Analysis of Maintaining a Fully Stocked Malignant Hyperthermia Cart versus and Initial Dantrolene Treatment Dose for Maternity Units. *Anesthesiology* 2018;129(2):249-259.
30. **Sun EC**, Miller TR, Moshfegh J, Baker LC. Anesthesia Care Team Composition and Surgical Outcomes. *Anesthesiology* 2018;129:700-709.
31. Chi D, Mariano ER, Memtsoudis SG, Baker LC, **Sun EC**. Regional Anesthesia and Readmission Rates After Total Knee Arthroplasty. *Anesthesia and Analgesia* (In Press)
32. **Sun EC**, Dutton RP, Jena AB. Comparison of Anesthesia Times and Billing Patterns by Anesthesia Practitioners. *JAMA Network Open* 2018;1(7):e184288.
33. **Sun EC**, Moshfegh J, Rishel CA, Cook CE, Goode AP, George SZ. Early Physical Therapy and Long-Term Opioid Use Among Opioid-Naïve Patients with Musculoskeletal Pain. *JAMA Network Open* 2018;1(8):e185909.
34. Moshfeh J, George SZ, **Sun EC**. Risk and Risk Factors for Chronic Opioid Use Among Opioid-Naïve Patients with Newly Diagnosed Musculoskeletal Pain in the Neck, Shoulder, Knee, or Low Back. *Annals Internal Medicine* 2018 (In press)
35. Butwick AJ, Bentley J, Wong CA, Snowden JM, **Sun EC**, Guo N. United States State-Level Variation in the Use of Neuraxial Analgesia During Labor for Pregnant Women. *JAMA Network Open* 2018;1(8):e186567.
36. Kent ML, Hurley RW, Oderda GM, Gordon DB, **Sun EC**, et al. American Society for Enhanced

Recovery and Perioperative Quality Initiative-4 Joint Consensus Statement on Persistent Perioperative Opioid Use: Definition, Incidence, Risk Factors, and Health Care System Initiatives. *Anesthesia and Analgesia* (In Press)

37. **Sun EC**, Mello MM, Rishel CA, et al. Association of Overlapping Surgery with Perioperative Outcomes. *JAMA* 2019;321(8):762-772
38. O'Connell C, Dexter F, Mauler DJ, **Sun EC**. Trends in Direct Hospital Payments to Anesthesia Groups: A Retrospective Cohort Study of Nonacademic Hospitals in California. *Anesthesiology* (Accepted)

Non Peer-Reviewed Papers

1. Hah JM, Bateman BT, Ratliff J, Curtin C, **Sun EC**. Chronic Opioid Use After Surgery: Implications for Perioperative Management in the Face of the Opioid Epidemic. *Anesthesia and Analgesia* 2017;125(5):1733-1740.
2. Philipson TJ, **Sun EC**. Cost of Caution: The Impact on Patients of Delayed Drug Approvals. *Project FDA Report*, Manhattan Institute. 2010.
3. Sood N, **Sun EC**, Daugherty L, Ghosh A. How Much is Too Much? An Analysis of Health Plan Profits and Administrative Costs in California. *California Health Care Foundation Research Brief*. 2009.
4. Philipson TJ, **Sun EC**. Is the FDA Safe And Effective? *Journal of Economic Perspectives* 2008;22(1):85-102.

Book Chapters

1. Philipson, Tomas J.; **Sun, EC**; Goldman, Dana P (2011), "Do We Need the FDA? Improving the Regulation of Pharmaceutical Products." In: *Regulation vs Litigation: Perspectives from Economics and Law*, ed. by Daniel Kessler and Andrei Shleifer. University of Chicago Press, Chicago, IL.

Books

1. Philipson, Tomas J.; Jena, Anupam B.; **Sun, Eric** (2010), *Health and Wealth Disparities in the United States*. American Enterprise Institute Press, Washington D.C.

Commentaries and Editorials

1. **Sun EC**, Mao J, Anderson TA. Treating Chronic Pain: is Buprenorphine the (or even an) Answer? *Anesthesia and Analgesia* 2018;127(2):336-337.
2. Lu AC, Wald SH, **Sun EC**. Into the Wilderness? The Growing Importance of Non-Operating Room Anesthesia Care in the United States. *Anesthesia and Analgesia* 2017;124(4):1044-1046.
3. **Sun EC**. Does the Modifier "QZ" Accurately Reflect Independent Nurse Anesthetist Practice: And Why Does it Matter? *Anesthesia and Analgesia Case Reports* 2016;6(7):220-221.
4. **Sun EC**, Dexter, F, Macario A. Can an Acute Pain Service Be Cost-Effective?" *Anesthesia and Analgesia* 2010;111:841-844.
5. Philipson T, **Sun EC**. Quantifying the High Cost of Caution may Speed Drug Approval Process." Editorial, *Investor's Business Daily*, June 14, 2010.
6. **Sun EC**, Jena AB, Lakdawalla, D, Reyes Carolina, Philipson TJ, Goldman DP. An Economic Evaluation of the War on Cancer. 2010. Column posted at <http://www.VoxEU.org/index.php?q=node/4476>.
7. Jena AB, Philipson TJ, **Sun EC**. Commentary on "Personal Decisions are the Leading Cause of

Death. *Operations Research* 2008;56(6): online commentary.

8. Philipson TJ, Sun EC. Regulating the Safety and Efficacy of Prescription Drugs. 2008. Column posted at <http://www.voxeu.org/index.php?q=node/804>
9. Philipson TJ, Jena AB, Sun, EC. The Institute of Medicine Report on the FDA: Where is the Science. *Health Economics* 2007;16(3), pp. 219-221.

Invited Presentations

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| 2019 | University of Melbourne, Monash University |
| 2018 | National University of Singapore, Stanford University, AUA, Australian Health Economics Conference |
| 2017 | Stanford University, AUA, Australian Health Economics Conference |
| 2016 | AAPM, Stanford University, Australian Health Economics Conference |
| 2015 | UCSF, Stanford University, Cornell University, Cleveland Clinic |
| 2014 | Anesthesiology 2014 meeting (New Orleans, LA), Stanford University |
| 2013 | Annual Health Economics Conference (University of Pennsylvania), Vanderbilt University |
| 2011 | Australian Health Economics Society (Melbourne) |
| 2010 | University of Illinois (Chicago) |
| 2009 | University of Chicago |
| 2008 | University of Chicago (x2), American Society of Health Economists (Duke University), Policy Briefing for California Senior Executive and Legislative Staff (Sacramento, CA), NBER |
| 2007 | ESF Research Conference, (Castle Salzau, Germany), Human Capital Conference (SUNY Buffalo), 17 th Annual Health Economics Conference (Arizona State University), Harvard University |
| 2006 | Ad Hoc Economics Group (New Brunswick, NJ) |

Teaching

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| 2008 | “Foundations of Health Economics” PhD level course at the RAND Pardee Graduate School. |
| 2004-2006 | “Foundations of Microeconomic Analysis” Introductory microeconomics course for undergraduates at the University of Chicago. |
| 2004-2006 | “Introductory Microeconomics.” Introductory Microeconomics course for MBA students. Teaching Assistant for 180 students |