

**PAUL E. GREENBERG**  
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Paul E. Greenberg, Director of Analysis Group's Health Care Practice, consults to pharmaceutical, biotechnology, and medical device companies in complex business litigation matters. Mr. Greenberg's litigation experience has included performing economic and statistical analyses in support of testifying experts, as well as presenting findings to investigators from US Attorneys' Offices and the Office of the Inspector General in numerous cases in which violations of the False Claims Act and/or the Anti-Kickback Statute have been alleged. Mr. Greenberg has provided economic consulting support in connection with class certification, liability, and damages in cases involving allegations of product failure, product fraud, antitrust, and/or patent infringement in the biopharmaceutical industry. He has provided strategic assistance to counsel at various key points in litigation, including pretrial discovery, settlement negotiations, and trial preparation. In the area of health economics and outcomes research (HEOR), Mr. Greenberg has undertaken cost-of-illness studies relating to numerous psychiatric and physical disorders, as well as pharmacoeconomic assessments of the cost-effectiveness of drugs based on data gathered in clinical trials and/or administrative claims files. Mr. Greenberg's work in HEOR has been widely published in leading medical and health economics journals. He currently serves on the editorial boards of *PharmacoEconomics*, the *Journal of Medical Economics*, and *Expert Opinion on Pharmacotherapy*, and he previously served on the editorial boards of *Law360's Life Sciences* and *Health Care* electronic newsletters.

**EDUCATION**

- M.S. Applied Microeconomics and Finance, Sloan School of Management,  
Massachusetts Institute of Technology
- M.A. Economics, University of Western Ontario
- A.B. Economics, Vassar College

**SELECTED LITIGATION CASE ASSIGNMENTS**

**Government Investigations Concerning Prescription Drug and Medical Device Marketing Practices**

Evaluated alleged conduct, quantified relevant sales, and assessed the causal connection, if any, between allegations in each case and sales at issue using economic, biostatistical, and epidemiologic approaches.

Investigations included the following matters:

- District of Massachusetts
  - Impella heart pumps/Abiomed
  - Tracleer, Ventavis, Veletri, and Opsumit/Actelion
  - Xtandi/Astellas
  - Celexa, Lexapro, Levothroid/Forest Laboratories
  - Septrafilm/Genzyme
  - Hyalgan/Genzyme
  - Subsys/Insys
  - Topamax/Johnson & Johnson
  - Vioxx/Merck

- Duodenoscopes/Olympus
- Bone growth stimulators/Orthofix
- Bextra, Lyrica, Zyvox/Pfizer
- Detrol LA/Pfizer
- Protonix/Pfizer
- OP-1, Calstrux/Stryker
- Lupron/TAP Pharmaceuticals
- Adcirca, Remodulin, Tyvaso, and Orenitram/United Therapeutics
- Southern District of New York
  - Azasite/Merck
  - Xifaxan, Apriso, Relistor, Moviprep, OsmoPrep, Solesta, and Deflux/Salix
- Western District of New York
  - Xibrom/Bausch & Lomb
- Eastern District of Pennsylvania
  - Evista/Eli Lilly
  - Zyprexa/ Eli Lilly
  - Rituxan/Genentech
  - Risperdal/Johnson & Johnson
  - H.P. Acthar Gel/Mallinckrodt
  - Vyvanse, Adderall/Shire
- District of Delaware
  - Zoladex/AstraZeneca
- District of Maryland
  - Atrovent, Combivent, Aggrenox/Boehringer Ingelheim
  - NovoSeven/Novo Nordisk
  - Remodulin, Tyvaso/United Therapeutics
- District of Columbia
  - Victoza/Novo Nordisk
  - Keppra/UCB
- Western District of Virginia
  - Depakote/Abbott Laboratories
- Northern District of Georgia
  - Botox/Allergan
  - Nuedexta/Avanir
- Eastern District of Michigan
  - Myoview/GE Healthcare
- Northern District of Illinois, Eastern Division
  - Lovenox/Sanofi
- Western District of Oklahoma
  - Rapamune/Pfizer
- Northern District of California
  - Tarceva/Genentech
- Office of the Inspector General
  - Lovaza/ GlaxoSmithKline

- ***US ex rel. Simpson v. Bayer A.G.***  
*US District Court for the District of New Jersey*  
Provided economic consulting assistance to Counsel for Bayer in connection with allegations of improper marketing practices with respect to Avelox (antibiotic), Trasylol (antifibrinolytic), and Baycol (statin).
- ***US, et al. v. Crescendo Bioscience, Inc., et al.***  
*US District Court for the Northern District of California*  
Provided expert support, as well as consulting support, to Counsel for Crescendo Bioscience in connection with allegations of improper marketing practices with respect to the Vectra diagnostic test for rheumatoid arthritis.
- ***In re: National Prescription Opiate Litigation***  
*US District Court for the Northern District of Ohio*  
Provided expert support to Counsel for Teva in connection with allegations of improper marketing practices with respect to opioid pain medications.
- ***In re: Opioid Litigation***  
*Supreme Court of the State of New York, Suffolk County*  
Provided expert support to Counsel for Teva in connection with allegations of improper marketing practices with respect to opioid pain medications.
- ***US ex rel. Chris Purcell v. Gilead Sciences, Inc.***  
*US District Court for the Eastern District of Pennsylvania*  
Provided expert support to Counsel for Gilead Sciences in connection with alleged false payments made with respect to Viread and Vemlidy.
- ***US ex rel. Justin Dillon v. Incyte Corporation***  
*US District Court for the Eastern District of Pennsylvania*  
Provided expert support to Counsel for Incyte in connection with alleged payment of kickbacks in the form of charitable donations with respect to Jakafi.
- ***US ex rel. Vitale v. MiMedx Group, Inc.***  
*US District Court for the District of South Carolina, Columbia Division*  
Provided consulting support to Counsel for MiMedx in connection with alleged payment of kickbacks in the form of charitable patient assistance contributions with respect to EpiFix.
- ***US ex rel. Charles Arnstein and Hossam Senousy v. Teva Pharmaceuticals USA, Inc., et al.***  
*US District Court for the Southern District of New York*  
Provided expert support, as well as consulting support, to Counsel for Teva in connection with alleged payment of kickbacks with respect to Copaxone and Azilect.
- ***State of Texas v. AstraZeneca LP***  
*District Court of the 353rd Judicial District, Travis County, Texas*  
Provided expert support, as well as consulting support, to Counsel for AstraZeneca in connection with allegations of improper marketing practices with respect to Seroquel.
- ***US ex rel. Brown v. Celgene Corp.***  
*US District Court for the Central District of California*

Provided consulting support to Counsel for Celgene in connection with allegations of improper marketing practices with respect to Thalomid and Revlimid.

- ***US ex rel. Nevyas, et al. v. Allergan Inc.***  
*US District Court for the Eastern District of Pennsylvania.*  
Provided consulting support to Counsel for Allergan in connection with allegations of improper marketing practices with respect to eye care medications.
- ***US ex rel. Banigan and Templin, et al, v. Organon USA Inc, et al.***  
*US District Court for the District of Massachusetts*  
Provided consulting support to Counsel for Omnicare in connection with allegations that it received kickbacks from Organon to promote the antidepressants Remeron and Remeron SolTab.
- ***US v. State of Florida***  
*US District Court for the Southern District of Florida*  
Provided consulting support to Counsel for the state of Florida in this dispute about whether the state has caused some medically complex or fragile children to be unnecessarily segregated in nursing facilities and placed others at risk of being unnecessarily segregated in such facilities.
- ***Multiple State Attorneys General v. GlaxoSmithKline***  
Provided economic, statistical, and epidemiological consulting support to Counsel for GlaxoSmithKline in connection with allegations of improper marketing practices with respect to Avandia.
- ***In the Matter of National Football League v. Thomas Brady***  
Supported Professor Edward Snyder on behalf of the National Football League Players Association (NFLPA) and Tom Brady in his testimony in an appeal hearing concerning the nature of the statistical evidence in the “deflategate” matter, June 23, 2015.
- ***DEA v. Holiday C.V.S., L.L.C., d/b/a CVS Pharmacy #219 and #5195***  
Testified on behalf of CVS in administrative proceedings before the Drug Enforcement Administration. Testimony included attention to dispensing patterns of certain controlled substances.
- ***US ex rel. Strom v. Scios, Inc. and Johnson & Johnson***  
*US District Court for the Northern District of California, San Francisco*  
Supported economic expert in analyzing the impact of alleged off-label promotion and payment of kickbacks with respect to Natrecor.
- ***Onyx Pharmaceuticals, Inc. v. Bayer Corporation, Bayer AG, Bayer Healthcare LLC, and Bayer Schering Pharma AG***  
*US District Court for the Northern District of California, San Francisco*  
Supported economic expert in analyzing lost profits stemming from breach of contract claims in the area of oncology.
- ***US ex. rel. John Underwood v. Genentech, Inc.***  
*US District Court for the Eastern District of Pennsylvania*  
Supported economic expert in analyzing impact of alleged off-label promotion and payment of kickbacks with respect to Rituxan.
- ***In re: Zyprexa Products Liability Litigation***  
*US District Court for the Eastern District of New York*

Supported multiple economic and statistics experts in assessments of causation and damages as well as cost-effectiveness of Zyprexa.

- ***Glaxo Americas, et al. v. Internal Revenue Service***  
*US Tax Court*  
Supported econometrics experts in assessing the impact of marketing on pharmaceutical sales.
- ***Grider v. Keystone Healthplan Central, et al.***  
*US District Court for the Eastern District of Pennsylvania*  
Supported Defendant's liability expert concerning allegations of improper payment for physician services.
- ***TAP Pharmaceutical Products, et al., v. Atrix Laboratories and Sanofi-Synthelabo***  
*US District Court, Northern District of Illinois, Eastern Division*  
Analyzed Plaintiff's price erosion, lost profits, and reasonable royalty damages calculations in connection with a pharmaceutical patent dispute, and developed economic analyses as input into Defendant's expert assessment.
- ***In re: Remeron Direct Purchaser Antitrust Litigation***  
*US District Court, District of New Jersey*  
Supported economic experts on damages and market definition issues related to delayed generic entry, and critiqued Plaintiffs' expert reports.
- ***Non-Participating Manufacturer Adjustment Proceeding Under the Tobacco Master Settlement Agreement Between the Settling States and the Participating Manufacturers***  
*Arbitration Proceeding Before Professor Daniel McFadden and The Brattle Group*  
On behalf of the settling states, analyzed whether the disadvantages of the 1998 Master Settlement Agreement were a "significant factor" contributing to the participating manufacturers' loss of market share in 2003 and 2004.
- ***Applied Molecular Evolution v. MorphoSys***  
*US District Court, District of Massachusetts*  
Conducted economic analysis of competition with respect to monoclonal antibody discovery, critiqued opposing expert's damages analysis, and developed input into affirmative damages calculations in support of Defendant's expert.
- ***MorphoSys v. Cambridge Antibody Technology***  
*US District Court, District of Columbia*  
Conducted economic analysis of competition, critiqued opposing expert's damages analysis, and developed affirmative damages calculations with respect to a patent dispute involving phage display technology. Testified for Plaintiff at deposition.
- ***In re: Synthroid Marketing Litigation***  
*US District Court, Northern District of Illinois, Eastern Division*  
Undertook economic analysis of the characteristics of competition that distinguish narrow therapeutic index drugs for this class certification matter.
- ***Bellin Health Systems, Inc. v. Aurora Health Care, Inc. and Aurora Health Care Northeast, Inc.***  
*US District Court, Eastern District of Wisconsin*

Developed economic analysis of competition in the hospital services industry, as well as damages analysis to support experts' opinions.

- ***CDC Technologies v. IDEXX Laboratories***

*US District Court, District of Massachusetts*

Provided economic analysis of competition in the veterinary products industry as input into expert's assessment.

***In re: Brand Name Prescription Drugs Antitrust Litigation***

*US District Court, Northern District of Illinois, Eastern Division*

Prepared economic analysis of competition in the retail drug industry, including assessment of Plaintiffs' Sherman Act and Robinson-Patman Act claims.

- ***Laboratorios A.F. Aplicaciones Farmaceuticas, S.A. de C.V. v. Rhone Poulenc Rorer, Inc., et al.***

*US District Court, Eastern District of Pennsylvania*

Assessed Plaintiffs' damages estimation surrounding product injunction with respect to the use of a particular drug in Mexico.

- ***Sylvia Bruce, et al. v. Trustees of Boston University***

*US District Court, District of Massachusetts*

Studied trends in the market for nurse professionals and nurse educators, including examination of market growth conditions and compensation structure over time.

## **HEALTH ECONOMICS PUBLICATIONS AND PRESENTATIONS**

- **Health Care Litigation**

- **Economic Burden of Illness and Impact of Treating:**

- **Major Depression**
- **Treatment-Resistant Depression**
- **Anxiety Disorders**
- **ADHD**
- **Respiratory Conditions**
- **Diabetes**
- **Other Disease States**

- **Impact of Illness and Its Treatment on Employee Productivity**

- **Other Economic Issues in the Health Care Sector**

### **Health Care Litigation**

"GAO Report Illuminates Insurer Influence on Drug Discounts" (with Christopher Ody and Craig Garthwaite), *Law360*, September 20, 2019

"Economists' Use of Data in Pharmaceutical Antitrust Cases" (with Mark Lewis, Tamar Sisitsky, David Mishol, Carletta Bruno), in *Pharmaceutical Industry Antitrust Handbook*, Section of Antitrust Law, American Bar Association, 2018 (second edition).

“Mass. Marijuana Laws Could Have Far-Reaching Impact” (with Catherine Alford, Crystal Pike), *Law360*, September 25, 2017.

“Learning From Social Media For Adverse Event Reporting” (with Mei Sheng Duh, Brian Ellman, Marc Van Audenrode, Pierre Y. Cremieux), *Law360*, May 23, 2017.

“Tracing the Path to Health Care Investigation Settlements” (with Kenneth A. Weinstein and Crystal T. Pike), *Law360*, April 17, 2017

“Legal Considerations in a World of Comparative Effectiveness Research” (with Paul Kalb, Crystal Pike), in *Decision Making in a World of Comparative Effectiveness Research*, H. Birnbaum and P. Greenberg, editors, Adis, 2017.

“United States: Economics” (with Mark Berberian, Jake Cheng, Pierre-Yves Cremieux, Edward Davis, Mark Lewis), Chapter 7 in: *The Antitrust Review of the Americas, 2017*, Global Competition Review.

“Practical Uses For Machine Learning In Health Care Cases” (with Mihran Yenikomshian, Lisa B. Pinheiro, Jimmy Royer), *Law360*, September 22, 2016.

“Pay-For-Delay & Stock Prices: Smoking Gun Or Damp Squib?” (with Pierre Y. Cremieux, Ted Davis, Mark J. Lewis), *Law360*, August 24, 2016.

“Stock Prices Aren’t Enough For ‘Rule Of Reason’ Analysis” (with Pierre Y. Cremieux, Ted Davis, Mark J. Lewis), *Law360*, July 19, 2016.

“Machine-Learning Algorithms Can Help Health Care Litigation” (with Lisa B. Pinheiro, Jimmy Royer, Nick Dadson), *Law360*, June 8, 2016.

“Can The Life Sciences Industry Bank On Biosimilars?” (with Tamar Sisitsky, Richard A. Mortimer), *Law360*, April 13, 2016.

“Viewing Recent Opioid Regulations In Context” (with Crystal T. Pike, Kenneth Weinstein, Pavel Darling), *Law360*, April 1, 2016.

“Correlation Or Cause: Brand-Name Drug Prescription Rates” (with Tamar Sisitsky, Richard A. Mortimer), *Law360*, March 23, 2016.

Signatory for Appellees, Brief of Antitrust Economists as Amici Curiae before the Third Circuit, *In re: Effexor XR Antitrust Litigation*, No. 15-1184; February 23, 2016. Reverse payments matter involving Effexor XR in which we argued that assessment of whether payments were “large and unexplained” needs to include all considerations exchanged, not just monetary consideration.

Signatory for Appellees, Brief of Antitrust Economists as Amici Curiae before the Third Circuit, *Mylan Pharmaceuticals v. Warner Chilcott Public Ltd. Co., et al.*, No. 15-2236; December 21, 2015. Product hopping matter involving Doryx in which we described the importance of incremental innovation.

Signatory for Appellees, Brief of Antitrust Economists as Amici Curiae before the First Circuit, *In re: Loestrin 24 Fe Antitrust Litigation*, No. 14-2071, 15-1250; August 27, 2015. Reverse payments matter involving Loestrin 24 Fe in which we focused on the acceleration clause and exchange of fair value.

Signatory for Appellants, Brief of Antitrust Economists as Amici Curiae before the Second Circuit, *State of New York v. Actavis plc & Forest Laboratories*, No. 14-4624; January 15, 2015. Product-hopping matter involving Namenda XR in which we described the economic effects of barriers to exit.

“Big Data Can Yield Big Insights On Promotional Practices,” (with Tammy Sisitsky), *Law360*, August 14, 2014.

Signatory for Appellees, Brief of Antitrust Economists as Amici Curiae before the Third Circuit, *In re: Lamictal Direct Purchaser Antitrust Litigation*, No. 14-1243; June 3, 2014. Reverse payments matter involving Lamictal in which we described the appropriate way to implement the Actavis framework.

“What Attorneys Should Know About FDA’s MedWatch Data” (with Mei Sheng Duh, Pierre Y. Cremieux, Brian Ellman), *Law360*, January 30, 2014.

Signatory for Respondents, Brief of Antitrust Economists as Amici Curiae before the Supreme Court, *Federal Trade Commission v. Actavis, Inc., et al.*, No. 12-416 (February 28, 2013). Reverse payments matter involving AndroGel in which we argued that the scope of patent test is the proper standard.

“Little Guidance for Lower Courts in *FTC v. Actavis*” (with Leslie E. John and Jason A. Leckerman), *Today’s General Counsel*, August/September 2013.

“Prioritizing Safety Versus Budget: FDA and CMS Adopt Different Stances” (with Tamar Sisitsky), *Food and Drug Law Institute Update*, May/June 2012.

“Confounding Factors In Off-Label Drug Use” (with Tamar Sisitsky and Crystal T. Pike), *Health Affairs*. 31, No. 2 (2012):460.

“An Effective Way to Quantify the Safety Profile of a Drug or Device When Background Toxicity Rates Are Low” (with Eric S. Wei, Brian Claggett, L.J. Wei), *Food and Drug Law Institute Update*. January/February 2011; 65-68 (online edition).

“Economists’ Use of Data in Pharmaceutical Antitrust Cases” (with Tamar Sisitsky, David Mishol, Carletta Bruno), in *Pharmaceutical Industry Antitrust Handbook*, Section of Antitrust Law, American Bar Association, 2009.

“Legal and Economic Perspectives Concerning U.S. Government Investigations of Alleged Off-Label Promotion by Drug Manufacturers” (with Dr. Paul Kalb), *PharmacoEconomics*. 2009; 27(8).

“Economic Analysis Has Growing Role in Off-Label Promotion Cases” (with Tamar Sisitsky). Guest commentary, *Rx Compliance Report*, May 21, 2009.

“Off-Label Use of Drugs,” presented at The Pharmaceutical Industry: Economics, Regulation, and Legal Issues, a judicial symposium in the Judicial Education Program, Northwestern Law School, May 5, 2009.

“Economic Analysis In Off-Label Promotion Cases” (with Tamar Sisitsky), *Law360*, February 9, 2009.

“The role of epidemiology in drug safety litigations” (with MS Duh, JR Weiner), *Food and Drug Law Institute Update*. November/December 2007: 31-34.

“A Roundtable Discussion: The Importance of Causation Analysis in Mass Tort Cases” (with G Lykos, S Gourley, C Davies), *Food and Drug Law Institute Update*, November/December 2006.

“Product Liability for FDA Regulated Products: In What Kind of World Are We Living?” Invited speaker at the *Food and Drug Law Institute Conference*, January 2005.

“Administrative Claims Data: A Valuable Tool in Pharmaceutical Litigation” (with HG Birnbaum), *Food and Drug Law Institute Update*. 2004; 1: 12-14.



“Product Liability in the Pharmaceutical Industry” (with PY Cremieux), *Food and Drug Law Institute Update*. 2004; 2: 13-16.

### **Economic Burden of Illness and Impact of Treating Major Depression**

“Impact of living with an adult with depressive symptoms among households in the United States” (with Lasair O’Callaghan, Andrée-Anne Fournier, Patrick Gagnon-Sanschagrin, Jessica Maitland, Abhishek Chitnis), *Journal of Affective Disorders*. 2024 349, 107-115. doi: 10.1016/j.jad.2023.12.040).

“The Economic Burden of Adults with Major Depressive Disorder in the United States (2019)” (with Abhishek Chitnis, Derek Louie, Ellison Suthoff, Shih-Yin Chen, Jessica Maitland, Patrick Gagnon-Sanschagrin, Andree-Anne Fournier, Ronald C. Kessler), *Advances in Therapy*. 2023 40 (10), 4460-4479. doi: 10.1007/s12325-023-02622-x.

“Sociodemographic Indicators and Quality of Life Impact of Major Depressive Disorder in the United States Using the Medical Expenditure Panel Survey” (with Abhishek Chitnis, Lasair O’Callaghan, Andree-Anne Fournier, Martin Cloutier, Patrick Gagnon-Sanschagrin, Jessica Maitland, Remi Bellefleur), *Value in Health*. 2023 26 (6), S314. doi: <https://doi.org/10.1016/j.jval.2023.03.1794>.

“Economic Burden of Major Depressive Disorder in the United States in 2019-2020: A Societal Perspective” (with Lasair O’Callaghan, Patrick Gagnon-Sanschagrin, Jessica Maitland, Remi Bellefleur, Martin Cloutier, Andree-Anne Fournier, Abhishek Chitnis), *Value in Health*. 2023 26 (6), S147. doi: <https://doi.org/10.1016/j.jval.2023.03.2459>.

“Economic Burden of Commercially Insured Patients With Major Depressive Disorder and Acute Suicidal Ideation or Behavior in the United States” (with D Pilon, C Neslusan, M Zhdanava, JJ Sheehan, K Joshi, L Morrison, C Rossi, P Lefebvre), *Journal of Clinical Psychiatry*. 2022 4; 83 (3): 40440.

“Major Depressive Disorders Have an Enormous Economic Impact,” *Scientific American*, May 15, 2021.

“The Economic Burden of Adults with Major Depressive Disorder in the United States (2010 and 2018)” (with Andree-Anne Fournier, Tammy Sisitsky, Mark Simes, Richard Berman, Sarah H. Koenigsberg, Ronald C. Kessler), *PharmacoEconomics*. 2021 06; 39(6): 653-665. e-pub ahead of print 2021/05/06. doi: 10.1007/s40273-021-01019-4.

“Introduction to the Special Issue of *PharmacoEconomics* on Major Depressive Disorders” (with Tammy Sisitsky), *PharmacoEconomics*. 2021 06; 39(6): 617. e-pub ahead of print 2021/05/14. doi: 10.1007/s40273-021-01041-6.

“The Growing Burden of Major Depressive Disorders (MDD): Implications for Researchers and Policy Makers” (with David Proudman and Dave Nellesen), *PharmacoEconomics*. 2021 05; 39(6): 619-625. doi: 10.1007/s40273-021-01040-7.

“Healthcare resource utilization and costs associated with postpartum depression among commercially insured households” (with CN Epperson, MY Huang, K Cook, D Gupta, A Chawla, A Eldar-Lissai), *Current Medical Research and Opinion*. 2020/10/2; 36(10), 1707-1716. doi: 10.1080/03007995.2020.1799772

“Economic Burden of Privately Insured Patients Diagnosed With Major Depressive Disorder and Suicide Ideation or Suicide Attempt in the United States” (with M Zhdanava, C Neslusan, D Pilon, JJ Sheehan, L

Morrison, N Shak, and P Lefebvre), poster presented at the *Academy of Managed Care Pharmacy (AMCP) Nexus*, 2019.

“Estimated healthcare costs among privately insured patients diagnosed with major depressive disorder and suicide ideation or suicide attempt in the United States” (with Maryia Zhdanava, Cheryl Neslusan, Dominic Pilon, John J. Sheehan, Laura Morrison, Nina Shak, and Patrick Lefebvre), poster presented at the Summer Meeting of *American Society of Health-System Pharmacists (ASHP)*, 2019.

“Characteristics of Privately Insured Patients Diagnosed with Major Depressive Disorder and Suicide Ideation or Suicide Attempt” (with Maryia Zhdanava, Cheryl Neslusan, Dominic Pilon, John Sheehan, Laura Morrison, Nina Shak, Patrick Lefebvre), poster presented at the Annual Meeting of the *American Psychiatric Association (APA)*, 2019.

“Healthcare Resource Utilization and Costs Associated with Postpartum Depression: Commercially Insured Households” (with Ming-Yi Huang, Keziah Cook, Erica Birk, Deepshekhhar Gupta, Anita Chawla, Adi Eldar-Lissai, C. Neill Epperson), poster presented at the *AMCP Managed Care & Specialty Pharmacy Annual Meeting*, 2019.

“Costs of Depression in the Workplace,” *Let’s Talk: The Experts Blog About Mental Health*, blog of the *Journal of Clinical Psychiatry*, May 13, 2015.

“Growing Burden: Toll of Major Depression Now Put At \$210 Billion A Year,” *Common Health*, WBUR (Boston NPR news station), March 11, 2015.

“The Growing Economic Burden of Depression in the U.S.,” *Scientific American MIND Guest Blog*. Commentary invited by editors of *Scientific American MIND*, February 25, 2015.

“Focus on Healthcare Economics,” *The Journal of Clinical Psychiatry: Focus Collections From Psychiatrist.com*, 2015.

“The Economic Burden of Adults With Major Depressive Disorder in the United States (2005 and 2010)” (with Andree-Anne Fournier, Tammy Sisitsky, Crystal T. Pike, Ronald C. Kessler), *Journal of Clinical Psychiatry*. February 2015;76(2):155-162.

“Comparing Treatment Persistence, Healthcare Resource Utilization, and Costs in Adult Patients with Major Depressive Disorder Treated with Escitalopram or Citalopram” (with EQ Wu, R Ben-Hamadi, AP Yu, E Yang, MH Erder), *American Health & Drug Benefits*. 2011; 4(2):78-87.

“Employer burden of mild, moderate, and severe major depressive disorder: mental health services utilization and costs, and work performance” (with HG Birnbaum, RC Kessler, D Kelley, R Ben-Hamadi, VN Joish), *Depression and Anxiety*. 2010; 27 (1), 78-89.

“Assessing the relationship between compliance with antidepressant therapy and employer costs among employees in the United States” (with HG Birnbaum, R Ben-Hamadi, D Kelley, M Hsieh, B Seal, E Kantor, PY Cremieux), *Journal of Occupational and Environmental Medicine*. February 2010;52(2):115-24.

“Determinants of direct cost differences among US employees with major depressive disorders using antidepressants” (with HG Birnbaum, R Ben-Hamadi, M Hsieh, J Tang, C Reygrobellet), *PharmacoEconomics*. 2009;27(6):507-17.

“Healthcare resource utilization and costs of mild, moderate, and severe depression in the workforce in the United States” (with HG Birnbaum, R Kessler, V Joish, D Kelley, R Ben-Hamadi, M Hsieh), *European Psychiatry*. 2009; 24, S614-S614.

“Assessing the relationship between compliance with antidepressant therapy and costs among employees in the United States” (with HG Birnbaum, R Ben-Hamadi, D Kelley, M Hsieh, B Seal, PY Cremieux), *European Psychiatry*. Volume 24, Supplement 1, 2009, Page S498.

“Antidepressant treatment patterns and costs among US employees” (with HG Birnbaum, J Tang, M Hsieh, EQ Wu, C Amand, R Ben-Hamadi), *Journal of Medical Economics*. 2009;12(1):36-45.

“Treatment persistence, healthcare utilization and costs in adult patients with major depressive disorder: a comparison between escitalopram and other SSRI/SNRIs” (with EQ Wu, E Yang, AP Yu, R Ben-Hamadi, M Haim Erder), *Informa UK Ltd*. 2009; 12 (2), 124-135.

“Treatment Persistence, Healthcare Utilization and Costs in Adult Patients with Major Depressive Disorder: A Comparison between Escitalopram and Other SSRI/SNRIs” (with EQ Wu, E Yang, AP Yu, R Ben-Hamadi, MH Erder), *Journal of Medical Economics*. 2009;12(2):124-35.

“Health Care Resource Utilization and Costs of Mild, Moderate, and Severe Depression in the United States” (with HG Birnbaum, R Kessler, VN Joish, D Kelley, M Hsieh, R Ben-Hamadi), *Value in Health*. 2008; 11 (6), A588-A589.

“Workplace Burden of Mild, Moderate, and Severe Depression in the United States” (with HG Birnbaum, R Kessler, B Seal, D Kelley, M Hsieh, R Ben-Hamadi), *Value in Health*. 2008; 11 (6), A590-A590.

“Comparison of treatment persistence, hospital utilization and costs among major depressive disorder geriatric patients treated with escitalopram versus other SSRI/SNRI antidepressants” (with EQ Wu, E Yang, A Yu, R Ben-Hamadi, M Haim Erder), *Current Medical Research and Opinion*. 2008; 24 (10), 2805-2813.

“Comparison of escitalopram versus citalopram for the treatment of major depressive disorder in a geriatric population” (with EQ Wu, E Yang, A Yu, M Haim Erder), *Current Medical Research and Opinion*. 2008; 24 (9), 2587-2595.

“The Risks of Multiple Generic Substitution of Antiepileptic Drugs: The Case of Topiramate” (with J Leloir, MS Duh, PE Paradis, D Latremouille-Viau, O Sheehy, et al.), *Value in Health*. 2008; 11 (3), A151-A151.

“Lifetime and 12-month prevalence of bipolar spectrum disorder in the National Comorbidity Survey replication” (with KR Merikangas, HS Akiskal, J Angst, RM Hirschfeld, M Petukhova, RC Kessler), *Archives of General Psychiatry*. May 2007;64(5):543-52.

“Antidepressant Treatment Patterns and Related Costs Among U.S. Employees” (with HG Birnbaum, J Tang, M Hsieh, EQ Wu, et al.), poster presented at the *APA Annual Meeting*, 2007.

“Comparison of Health Care Costs and Hospitalization Days of Elderly Major Depressive Disorder Patients Treated with Escitalopram and Other Antidepressants” (with EQ Wu, E Yang, MH Erder, AP Yu, M Buessing). Podium presentation at the Annual Meeting of the *International Society for Pharmacoeconomics & Outcomes Research (ISPOR)*, 2007.

“Health Care Costs and Resource Use in Patients with Major Depressive Disorder: A Comparison between Escitalopram and Other Antidepressants” (with EQ Wu, E Yang, MH Erder, AP Yu, M Buessing), poster presented at Annual Meeting of *ISPOR*, 2007.

“Comparing Treatment Compliance, Hospitalization, and Costs of Elderly MDD Patients on Escitalopram and Citalopram” (with EQ Wu, E Yang, MH Erder, M Buessing), *International Health Economics Association (iHEA)*, 2007.

“Health Care Costs and Resource Use in Patients with Major Depressive Disorder: A Comparison between Escitalopram and Other Antidepressants” (with EQ Wu, E Yang, MH Erder, M Buessing), *ISPOR*, 2007.

“Health care costs and resource use in patients with major depressive disorder: a comparison between escitalopram and other antidepressants (SSRI/SNRI)” (with EQ Wu, E Yang, MH Erder, M Buessing), *ISPOR*, 2007.

“Comparison of Health Care Costs and Hospitalization Days of Elderly Major Depressive Disorder Patients Treated with Escitalopram and Other Antidepressants” (with EQ Wu, E Yang, MH Erder, M Buessing), *ISPOR*, 2007.

“Comparing Treatment Compliance and Hospitalization of Elderly MDD Patients on Escitalopram and Other SSRI/SNRIs” (with EQ Wu, E Yang, MH Erder, M Buessing), Annual Meeting of the *New Clinical Drug Evaluation Unit (NCDEU)*, 2007.

“Comparing Treatment Compliance, Hospitalizations, and Costs of Elderly MDD Patients on Escitalopram and Citalopram” (with EQ Wu, E Yang, MH Erder, M Buessing), *Institute on Psychiatric Services (APA-I)*, 2007.

“Treatment Compliance of Adult Depressed Patients on Escitalopram and Citalopram” (with EQ Wu, E Yang, MH Erder, M Buessing), *European College of Neuropsychopharmacology (ECNP)*, 2007.

“Considering the costs of bipolar depression” (with RC Kessler, HS Akiskal, M Ames, HG Birnbaum, RM Hirschfeld, PS Wang), *Behavioral Healthcare*. January 2007; 27(1): 45-7.

“Annual Costs Associated with Patterns of Antidepressant Treatment Response Among Employees” (with EQ Wu, HG Birnbaum, R Ben-Hamadi, AP Yu, J Tang, I Gilloteau, E), *Value in Health*. 2006; 9 (3), A66-A66.

“Annual Costs Associated with Patterns of Antidepressant Treatment Response among Employees” (with Wu EQ, Birnbaum H, Ben-Hamadi R, Yu A, Tang J, Gilloteau I, Smadja E), *ISPOR*, 2006.

“Patterns of Antidepressant Treatment Response in an Employed Population” (with EQ Wu, H Birnbaum, R Ben-Hamadi, J Tang, I Gilloteau, E Smadja), *APA Annual Meeting*, 2006.

“The Economic Burden of Depression: Societal and Patient Perspectives” (with HG Birnbaum), in J. Licinio and M.-L. Wong, *Biology of Depression: From Novel Insights to Therapeutic Strategies* (pp. 33-45). John Wiley & Sons, Ltd. 2005.

- “The Economic Burden of Depression in the U.S.: Societal and Patient Perspectives” (with HG Birnbaum), *Expert Opinion on Pharmacotherapy*. 2005; 6(3): 369-376.
- “Direct Health Care Cost of Depressive Disorders in The United States: A Patient Time Profile” (with HG Birnbaum, R Kessler, E Moyneur, S Lowe, S Leong, D Mallett), *Value in Health*. 2004; 7(3), 271-271.
- “Cost and Comorbidities Associated With Bipolar Disorder” (with A Parece, W EQ, HG Birnbaum, Z Huang, T Victor, R Kessler), *Value in Health*. 2004; 7(3), 272-273.
- “Cost and Comorbidities Associated with Bipolar Disorder” (with Parece A, Wu EQ, Birnbaum HG, Huang Z, Victor T, Kessler RC), *ISPOR*, 2004.
- “Comorbidities and Cost Associated with Bipolar Disorder” (with A Parece, EQ Wu, HG Birnbaum, Z Huang, T Victor, RC Kessler), poster presented at *American Public Health Association’s (APHA) 132nd Annual Meeting*, 2004.
- “Drug Treatment Patterns of Bipolar Disorder and Associated Costs” (with EQ Wu, HG Birnbaum, Z Huang, RC Kessler, A Parece, T Victor), poster presented at *National Institute of Mental Health’s (NIMH) New Clinical Drug Evaluation Unit (NCDEU) Meeting*, 2004.
- “Drug treatment patterns and associated costs in bipolar disorder” (with EQ Wu, HG Birnbaum), *APHA’s 132nd Annual Meeting*, 2004.
- “Drug Treatment Patterns of Bipolar Disorder and Associated Costs” (with Wu EQ, Birnbaum HG, Kessler RC, Huang Z, Victor T), *ISPOR*, 2004.
- “Depression and Fibromyalgia: Treatment and Cost When Diagnosed Separately or Concurrently” (with R Robinson, M Morley, T Sisitsky, HG Birnbaum, F Wolfe), *Journal of Rheumatology*. 2004; 31(8): 1621-1629.
- “Money Can’t Buy Happiness...” (with HG Birnbaum, RC Kessler), *Business & Health*, April 15, 2004.
- “The direct health care cost of depressive disorders in the United States in 2000” (with R Kessler, HG Birnbaum, E Moyneur, SA Leong, SW Low), *European Neuropsychopharmacology*. 2003; 13, S263.
- “The Economic Burden of Depression in 2000” (with R Kessler, P Corey-Lisle, HG Birnbaum, S Leong, S Lowe), *Value in Health*. 2003; 6 (3), 356-356.
- “The Economic Burden of Depression in the United States: How Did It Change Between 1990 and 2000?” (with HG Birnbaum, RC Kessler, S Leong, S Lowe), *Journal of Clinical Psychiatry*. 2003; 12: 1465-1475.
- “Economic Impact of Olanzapine/Fluoxetine Combination Therapy Among Patients Treated for Depression: A Pilot Study” (with P Corey-Lisle, HG Birnbaum, M Marynchenko, S Dube), *Psychopharmacology Bulletin*. 2003; 37(3): 90-98.
- “Economic Consequences of Not Recognizing Bipolar Disorder Patients: A Cross-Sectional Descriptive Analysis” (with HG Birnbaum, L Shi, E Dial, E Oster, D Mallet), *Journal of Clinical Psychiatry*. 2003; 64(10): 1201-1209.
- “The Economic Burden of Depression with Painful Symptoms” (with HG Birnbaum, S Leong, R Robinson), *Journal of Clinical Psychiatry*. 2003; 64(suppl 7): 17-23.

“Healthcare Cost of Depression: a Patient Time Perspective,” poster presented at *European College of Neuropsychopharmacology Annual Meeting*, 2003.

“Patterns of treatment among bipolar disorder patients treated with antidepressants” (with HG Birnbaum, E Dial, EF Oster, L Shi), *Value in Health*. 2003; 6(3), 354-354.

“Economic burden of not recognizing bipolar disorder patients” (with HG Birnbaum, E Dial, EF Oster, L Shi), *Value in Health*. 2003; 6(3), 353-353.

“Economic Burden of Not Recognizing Bipolar Patients,” poster presented at Annual Meeting of *ISPOR*, 2003.

“Depression and Fibromyalgia: Treatment Patterns and Cost,” poster presented at Annual Meeting of *ISPOR*, 2003.

“Comparing the Economic Burden of Depression in 1990 and 2000,” poster presented at Annual Meetings of the *APA* and *ISPOR*, 2003.

“Patterns of Treatment among Bipolar Patients,” poster presented at Annual Meeting of *ISPOR*, 2003.

“Depression and Fibromyalgia: Treatment and Cost When Diagnosed Separately or Concurrently,” poster presented at the Annual Meeting of the *AMCP*, 2003.

“The Economics of Women and Depression: an Employer Perspective” (with S Leong and HG Birnbaum), *Journal of Affective Disorders* March 2003, based on Summit on Women and Depression, proceedings of a conference sponsored by the American Psychological Association and the National Institute of Mental Health.

“The economics of women and depression: an employer's perspective” (with HG Birnbaum, SA Leong), *Journal of Affective Disorders*. 2003; 74 (1), 15-22.

“Identification and One-Year Costs of Treatment-Resistant Depression in a Claims Data Analysis” (with P Corey-Lisle, A Claxton, HG Birnbaum, M Marynchenko), *Value in Health*. 2001; 4 (6), 458-458.

“Depression and Work Productivity: The Comparative Costs of Treatment Versus Nontreatment” (with G Simon, C Barber, R Frank, R Rose, P Wang, RC Kessler), *Journal of Occupational and Environmental Medicine*. 2001; 43(1): 2-9.

“Cost of Depression: Current Assessment and Future Directions” (with S Leong and HG Birnbaum), *Expert Review of Pharmacoeconomics & Outcomes Research*. 2001; 1(1): 69-76.

“Treatment-Resistant Depression: Retrospective Evaluation of Economic Consequences” (with P Corey-Lisle, A Claxton, HG Birnbaum, M Marynchenko), poster presented at annual meeting of American Psychiatric Association, 2001.

“Assessing the Economic Impact of Psychiatric Disorders: Where to Begin?” (with HG Birnbaum, S Leong) *Expert Opinion on Pharmacotherapy*. 2001; 2(4): 641-52.

“The Impact of Antidepressant Use on Social Functioning: Reboxetine Versus Fluoxetine” (with A Arcelus, HG Birnbaum, C Rowland, L Venditti, T Williamson), *International Clinical Psychopharmacology*. 2000; 15(5): 279-89.

“The Workplace Burden of Depression: Underlying Causes, Recent Empirical Findings, and Future Directions” (with HG Birnbaum), *TEN: The Economics of Neuroscience*. 2000; 2(6): 37-40.

“Management of Major Depression in the Workplace: Impact on Employee Work Loss” (with HG Birnbaum, PY Cremieux, RC Kessler), *Disease Management & Health Outcomes*. 2000; 7(3): 163-71.

“Economic Analysis: Defining Social Outcome Parameters and the Cost Impact of Mental Health Disability” (with HG Birnbaum), invited presentation, Disease State Management and Integrated Health Care Delivery Systems, Beth Israel Hospital, Boston, MA, March 2000.

“The Economic Burden of Depression in the Workplace,” invited speaker at press conference, Societal Impact of Depression: New Data and Implications for Outcomes, National Foundation for Brain Research, September 1999.

“Economics of Depression and Its Treatment,” invited comment on “Costs of Depressive Disorders” by JF Rosenbaum and TR Hylan, in *Evidence & Experience in Psychiatry*, World Psychiatric Association, 1999.

“Depression in the Workplace: Effects of Treatment on Short-Term Disability” (with RC Kessler, C Barber, HG Birnbaum, R Frank, R Rose, G Simon, P Wang), *Health Affairs*. 1999; 18(5): 163-71.

“Workplace Burden of Depression: Case Study in Social Functioning Using Employer Claims Data” (with HG Birnbaum, M Barton, RC Kessler, C Rowland, T Williamson), *Drug Benefit Trends*. 1999; 11(8): 6-12.

“Economics of Behavioral Health: Measuring the ROI & Social Functioning for Intervention of Depression,” invited speaker at the Annual Meeting of the *American Association of Health Plans*, 1999.

“The Impact of Antidepressant Use on Social Functioning: Reboxetine Versus Fluoxetine” (with L Venditti, A Arcelus, HG Birnbaum, C Barr, C Rowland, T Williamson), poster presented at the Annual Meeting of *ISPOR*, 1999.

“The Cost of Depression: Productivity in the Workplace,” invited speaker for teleconference series “*Dimensions of Depression: The Horizon Series*,” 1999.

“Workplace Management of Depression: A Case Study in Social Functioning,” invited speaker at the *Third Annual Disease Management Congress*, 1999.

“Workplace Effects of Chronic Depression and Its Treatment” (with E Berndt, S Finkelstein, R Howland, A Keith, M Keller, AJ Rush, J Russell), *Journal of Health Economics*, 1998.

“Economic Impact of Improved Work Performance after Treatment of Chronic Depression” (with J Russell, S Finkelstein, E Berndt), *European Neuropsychopharmacology*. 1996; 6(1003): 128-128.

“The Pharmacoeconomics of Chronic Depression: Can We Afford Not to Treat?” Invited speaker at the *International Satellite Symposium of the 10th World Congress of Psychiatry* event, “Chronic Depression in 2000 AD: Will It Survive Treatment?” Madrid, Spain, August 1996.

“Depression in the Workplace: An Economic Perspective” (with RC Kessler, T Nells, S Finkelstein, E Berndt), invited article in *Selective Serotonin Re-Uptake Inhibitors*, JP Feighner and WF Boyer, editors, Chichester, UK: John Wiley and Sons, 1996.

“Improvement in subjective work performance after treatment of chronic depression: some preliminary results. Chronic Depression Study Group” (with S Finkelstein, E Berndt, RA Parsley, J Russell, M Keller), *Psychopharmacology Bulletin*. 1996; 32(1): 33-40.

“How Much Does Depression Cost Society?” (with S Finkelstein), invited article in *The Harvard Mental Health Letter*, October 1994.

“The Economics of Clinical Depression” *MIT Management Magazine*, Sloan School of Management, Massachusetts Institute of Technology, Spring 1994.

“What Depression Is Costing Your Business,” invited speaker at the Depression in the Workplace, It Is Our Business! event, *Mental Health Association of Connecticut*, Hartford, CT; repeated at the Annual Conference of the *Midwest Business Group on Health*, Chicago, IL, March 1994.

“How to Measure the Costs of Mental Illness in the Workplace,” invited speaker at the *National Public Education Campaign on Clinical Depression* event, *Mental Health Association of Illinois*, Chicago, IL, February 1994.

Press conference with Tipper Gore concerning Analysis Group/Economics’ and MIT’s research on the economics of depression, sponsored by the *National Mental Health Association*, held at the National Press Club, Washington, DC, December 1993.

“The Economic Burden of Depression in 1990” (with L Stiglin, S Finkelstein, E Berndt), *Journal of Clinical Psychiatry* 1993; 54(11): 405-418.

“Depression: A Neglected Major Illness” (with L Stiglin, S Finkelstein, E Berndt), *Journal of Clinical Psychiatry* 1993; 54(11).

“Economics of Depression: Costs and Tradeoffs,” invited speaker at the *Northeast Regional Managed Health Care Congress – Pharmacy Track*; repeated at *New Hampshire Academy of Family Physicians* Annual Scientific Meeting, Manchester, NH, November 1993.

### **Economic Burden of Illness and Impact of Treating Treatment-Resistant Depression**

“Correction: Burden of treatment-resistant depression in Medicare: A retrospective claims database analysis” (with Dominic Pilon, Kruti Joshi, John J. Sheehan, Miriam L. Zichlin, Peter Zuckerman, Patrick Lefebvre), *PLOS One*. 2021; 16(4): e0249731.

“US Integrated Delivery Networks Perspective on Economic Burden of Patients with Treatment-Resistant Depression: A Retrospective Matched-Cohort Study” (with D Pilon, H Szukis, K Joshi, D Singer, JJ Sheehan, JW Wu, P Lefebvre), *PharmacoEconomics Open* 4, 119–131 (2020). doi.org/10.1007/s41669-019-0154-z.

“US Integrated Delivery Networks Perspective on Economic Burden of Patients with Treatment-Resistant Depression: A Retrospective Matched-Cohort Study” (with D Pilon, H Szukis, K Joshi, D Singer, JJ Sheehan, JW Wu, P Lefebvre), *PharmacoEconomics Open*. 2019 06. e-pub ahead of print 2019/06/30. doi: 10.1007/s41669-019-0154-z.

“Medicaid spending burden among beneficiaries with treatment-resistant depression” (with D Pilon, JJ Sheehan, H Szukis, D Singer, P Jacques, D Lejeune, P Lefebvre), *Journal of Comparative Effectiveness Research*. 2019 04; 8(6): 381-392. e-pub ahead of print 2019/02/09. doi: 10.2217/cer-2018-0140.



“Burden of Treatment Resistant Depression in Medicare: A Retrospective Claims Database Analysis” (with Dominic Pilon, Kruti Joshi, John Sheehan, Miriam Zichlin, Peter Zuckerman, Patrick Lefebvre), poster presented at the Annual Meeting of the *APA*, 2019.

“Direct and Indirect Cost Burden and Change of Employment Status in Treatment-Resistant Depression: A Matched-Cohort Study Using a US Commercial Claims Database” (with TB Amos, N Tandon, P Lefebvre, D Pilon, RL Kamstra, I Pivena), *The Journal of Clinical Psychiatry*, 2018 March/April; 79(2). pii: 17m11725. doi: 10.4088/JCP.17m11725.

“Medicaid Spending Burden among Beneficiaries with Treatment-Resistant Depression” (with JJ Sheehan, D Pilon, D Singer D, and H Szukis), poster presented at the Summer Meeting of the *ASHP*, 2018.

“Cost Burden of Patients with Treatment Resistant Depression Who Received Care in US Integrated Delivery Networks: A Retrospective Claims Database Analysis” (with D Pilon, H Szukis, D Singer, JJ Sheehan, JW Wu, and P Lefebvre), poster presented at the *AMCP Nexus*, 2018.

“Healthcare Costs and Treatment Patterns among Patients with Treatment-Resistant Depression,” (with TB Amos, N Tandon, P Lefebvre, D Pilon, R Kamstra, and I Pivneva), poster presented at the Annual Meeting of the *APA*, 2017.

“Treatment Resistant Depression – Economic Burden of the Disease and Its Costs to US Employers,” invited presentation to the *Cyberonics Employer Expert Panel/Advisory Board*, New York, NY, March 2007.

“Economic Implications of Treatment-Resistant Depression Among Employees” (with HG Birnbaum, P Corey-Lisle, M Marynchenko, A Claxton), *Pharmacoeconomics*. 2004; 22(6):363-373.

“Identification of a Claims Data ‘Signature’ and Economic Consequences for Treatment-Resistant Depression” (with HG Birnbaum, M Marynchenko,) *Journal of Clinical Psychiatry* 2002; 63: 717-26.

“Identification of claims data ‘signature’ and economic consequences of treatment-resistant depression” (with P Corey-Lisle, A Claxton, HG Birnbaum, M Marynchenko, G Gandhi), *European Neuropsychopharmacology*. 2001; 11, S350.

### **Economic Burden of Illness and Impact of Treating Anxiety Disorders**

“What’s So Different about Anxiety Disorders (such as Phobias)?” (with HG Birnbaum and T Sisitsky) in *Phobias*, vol. 7 of the World Psychiatric Association series *Evidence and Experience in Psychiatry*, John Wiley & Sons, Ltd. 2004; 337-339.

“The Economic Burden of Anxiety and Stress Disorders” (with RC Kessler), in *Neuropsychopharmacology: The Fifth Generation of Progress*, K. Davis, editor, Baltimore, MD: The American College of Neuropsychopharmacology and Lippincott Williams & Wilkins, 2002.

“The Economics of Anxiety Disorders” (with T Sisitsky), *Psychiatric Times’ Mental Health Economics: Practical Information on Changes in the U.S. Health Care System*, June 2000.

Press Conference at the National Press Club to release “The Economic Burden of Anxiety Disorders in the 1990s,” *Anxiety Disorders Association of America*, July 1999.

“The Economic Burden of Anxiety Disorders in the 1990s” (with J Ballenger, E Berndt, J Davidson, S Finkelstein, A Fyer, T Sisitsky), *Journal of Clinical Psychiatry*. 1999; 60(7): 427-435.

### **Economic Burden of Illness and Impact of Treating ADHD**

“Costs of Attention Deficit-Hyperactivity Disorder (ADHD) in the US: Excess Costs of Persons with ADHD and their Family Members in 2000” (with HG Birnbaum, RC Kessler, S Lowe, K Secnik, et al.), *Current Medical Research and Opinion*. 2005; 21(2): 195-206.

“Incidence and Costs of Accidents among Attention-Deficit/Hyperactivity Disorder Patients” (with A Swensen, R Ben-Hamadi, HG Birnbaum, PY Cremieux, K Secnik), *Journal of Adolescent Health*. 2004; 35(4): 346-349.

“Attention-Deficit/Hyperactivity Disorder: Increased Costs for Patients and Their Families” (with A Swensen, K Secnik, M Marynchenko, HG Birnbaum, A Claxton), *Journal of the American Academy of Child and Adolescent Psychiatry*. 2003; 42(12): 1415-1423.

“Prevalence and Costs of Accidents Among Attention-Deficit/Hyperactivity Disorder Patients,” poster presented at the Annual Meeting of *ISPOR*, 2002.

“Increased Risk of Accidents and Injuries for Patients with Attention-Deficit/Hyperactivity Disorder,” poster presented at the Annual Meeting of the *APA*, 2002.

“Economic Analysis of Patients with Attention Deficit Hyperactivity Disorder” (with A Swensen, HG Birnbaum, M Marychenko), poster presented at the *Drug Information Association (DIA)* Conference, 2001.

### **Economic Burden of Illness and Impact of Treating Respiratory Conditions**

“Lower Respiratory Tract Infections: Impact on the Workplace” (with M Morley, S Leong, HG Birnbaum, G Colice), *PharmacoEconomics*, 2003; 21(10): 749-59.

“Economic Burden of Respiratory Infections in an Employed Population” (with HG Birnbaum, G Colice, M Morley), *CHEST*, 2002; 122(2): 603-611.

“Direct and Indirect Costs of Asthma to an Employer” (with W Berger, HG Birnbaum, M Holland, R Auerbach, K Atkins, L Wanke), *Journal of Allergy and Clinical Immunology*, 2002; 109(2): 264-270.

“Economic Burden of Pneumonia in an Employed Population” (with HG Birnbaum, G Colice, M Morley, M Cifaldi), *Archives of Internal Medicine*. 2001; 161: 2725-31.

“Direct and Indirect Costs of Respiratory Infections” (with HG Birnbaum, M Morley, M Cifaldi, G Colice), poster presented at Annual Meeting of *ISPOR*, 2001.

“Direct and Indirect Costs of Asthma to an Employer” (with HG Birnbaum, M Holland, R Auerbach, K Atkins, L Wanke), poster presented at the Annual Meeting of the *American Academy of Allergy, Asthma and Immunology*, 2001.

“Direct and Indirect Costs of Asthma to an Employer,” (with HG Birnbaum, LA Wanke, K Atkins), *Value in Health*. 2000; 3(2): 143-143.

“Savings in Direct Medical Costs from the Use of TOBI™ (Tobramycin Solution for Inhalation) in Patients with Cystic Fibrosis” (with J LeLorier, S Perreault, HG Birnbaum, O Sheehy), *Clinical Therapeutics*. 2000; 22(1): 140-51.

“Savings in Direct Medical Costs Produced by Tobramycin Solution for Inhalation (TOBI®) in Children with Cystic Fibrosis” (with J LeLorier, S Perreault, HG Birnbaum), poster presented at the Annual Meeting of *ISPOR*, 1999.

“Savings in direct medical costs produced by an inhaled solution of tobramycin (TOBI) in children with cystic fibrosis” (with J LeLorier, S Perreault, HG Birnbaum), *The Netherlands Journal of Medicine*. 1999; 54, S80.

“Savings in Direct Medical Costs Produced by an Inhaled Solution of Tobramycin (TOBI) in Children with Cystic Fibrosis” (with J LeLorier, S Perreault, HG Birnbaum), *Value in Health*. 1999; 2(3): 189-189.

“Analysis of Hospitalization and IV Anti-Pseudomonal Antibiotic Use in Cystic Fibrosis Patients on Tobramycin Solution for Inhalation (TOBI®)” (with HG Birnbaum, S Finkelstein, E Berndt, K Otto, B Montgomery, J Kylstra, B Ramsey), poster presented at the *North American Cystic Fibrosis Conference*, 1998.

### **Economic Burden of Illness and Impact of Treating Diabetes**

“Obesity’s Impact on Diabetes Patients’ Health-Related Quality of Life in the U.S.” (with PY Cremieux, J Xie, EQ Wu, A Castor), poster presented at annual meeting of the *2nd ISPOR Asia-Pacific Conference*, 2006.

“Original Articles-Epidemiology. Health Services. Psychosocial Research-Productivity And Medical Costs Of Diabetes In A Large Employer Population” (with S Ramsey, KH Summers, SA Leong, HG Birnbaum, JE Kemner), *Diabetes Care*. 2002; 25(1): 23-29.

“Productivity and Medical Costs of Diabetes in a Large Employer Population” (with S Ramsey, K Summers, S Leong, HG Birnbaum, J Kemner), *Diabetes Care*. 2002; 25(1): 23-29.

“Economic Outcomes of Diabetes Among an Employed Population” (with SA Leong, KH Summers, HG Birnbaum, JE Kemner, EC Lentz), *Value in Health*. 2001; 4(2): 116-116.

“Identification of Diabetes Patients Using Claims Data: An Economic Analysis,” (with K Summers, S Leong, HG Birnbaum, J Kemner, S Ramsey) *Drug Benefit Trends*. 2001; 13(suppl B): 28-33.

“Productivity and Medical Costs of Diabetes in a Large Employer Population” (with S Ramsey, K Summers, S Leong, HG Birnbaum, J Kemner), poster presented at the Annual Meeting of *ISPOR*, 2001.

### **Economic Burden of Illness and Impact of Treating Other Disease States**

“Cost of Illness: An Ongoing Battle Worth Fighting,” *PharmacoEconomics*. 32 (12), 1151-1152.

“Evaluation of the Value of Web Data for Detecting Drug Adverse Events” (with Mei S Duh, Pierre Cremieux, Marc Van Audenrode, Francis Vekeman, Paul Karner, Philippe Giguere-Duval, Yongling Xiao, Joe Damron), *Pharmacoepidemiology and Drug Safety*, 23, 235-236.

“Efficacy and effectiveness of depot versus oral antipsychotics in schizophrenia: synthesizing results across different research designs” (with NY Kirson, PJ Weiden, S Yermakov, W Huang, T Samuelson, SJ Offord), *J Clin Psychiatry*, 74 (6), 568-575.

“Risk of Hepatotoxicity-Related Hospitalizations among Patients Treated with Opioid/Acetaminophen Combination Prescription Pain Medications” (with MS Duh, F Vekeman, C Korves, P Lefebvre, E Dial, D Latremouille-Viau, RS Wei), *Pain Medicine*. 2010; 11(11): 1718-1725.

“The economic implications of generic substitution of antiepileptic drugs: a review of recent evidence” (with MS Duh, KE Cahill, PE Paradis, PY Cremieux), *Expert Opin Pharmacother*. October 2009; 10(14): 2317-28.

“The risks and costs of multiple-generic substitution of topiramate” (with MS Duh, PE Paradis, D Latrémouille-Viau, SP Lee, MB Durkin, GJ Wan, MF Rupnow, J LeLorier), *Neurology*. 2009 June 16; 72(24): 2122-9.

“Management of anemia: a critical and systematic review of the cost effectiveness of erythropoiesis-stimulating agents” (with MS Duh, JR Weiner, LA White, P Lefebvre), *Pharmacoeconomics*. 2008; 26(2):99-120.

“Impact and treatment of anemia in the elderly: clinical, epidemiological and economic perspectives” (with MS Duh and A Laytpova), *Expert Rev Pharmacoeconomics Outcomes Res*. October 2006; 6(5): 577-90.

“Estimated costs of prescription opioid analgesic abuse in the United States in 2001: a societal perspective” (with HG Birnbaum, AG White, JL Reynolds, M Zhang, S Vallow, JR Schein, NP Katz), *Clin J Pain*. October 2006; 22(8): 667-76.

“Economic Cost and Epidemiological Characteristics of Patients with Fibromyalgia Claims” (with R Robinson, HG Birnbaum, T Sisitsky, M Morley), *Journal of Rheumatology*. 2003; 30(6): 1318-25.

“Epoetin Alfa Is More Effective and Less Costly Relative to Darbepoetin Alfa in Lung Cancer Patients Receiving Treatment for Chemotherapy-Induced Anemia” (with PY Cremieux, C Piech), poster presented at the Annual Meeting of the *American Society of Clinical Oncology*, 2003.

“Productivity Loss Due to Irritable Bowel Syndrome—Reply” (with HG Birnbaum, S Leong, C Thibeault, R Ben-Hamadi, V Barghout, F Frech, J Ofman), *Arch Intern Med*. 2003; 163: 2249-2250.

“Economic Outcomes of Irritable Bowel Syndrome: an Employer Perspective” (with HG Birnbaum, S Leong, V Barghout, R Ben-Hamadi, F Frecht), poster presented at the Annual Meeting of the *American College of Gastroenterology*, 2001.

“Understanding the Pharmacoeconomic Profile of Cancer” (with PY Cremieux, HG Birnbaum), *ONE: Oncology Economics*. 2000; 1(10): 36-39.

“Direct and Indirect Costs of Rheumatoid Arthritis to an Employer” (with HG Birnbaum, M Barton, T Sisitsky, R Auerbach, L Wanke, M Buatti), *Journal of Occupational and Environmental Medicine*, 2000; 42(6): 588-596; poster presented at the Annual Scientific Meeting of the *American College of Rheumatology*, 1999.

“Comment: cost comparison of recombinant human erythropoietin and blood transfusion in cancer chemotherapy-induced anemia” (with S Finkelstein, S Huber), *The Annals of Pharmacotherapy*, September 1997.

### **Impact of Illness and Its Treatment on Employee Productivity**

“A Regulatory Perspective on Productivity Claims: Implications for Future Productivity Research” (with HG Birnbaum), *Health and Work Productivity: Emerging Issues in Research and Policy*, Ronald Kessler and Paul Stang, editors, Chicago, IL: University of Chicago Press, Spring 2006.

“Linking Administrative Claims Data with Archival Productivity Measures to Inform Employer Decision Making” (with HG Birnbaum), *Health and Work Productivity: Emerging Issues in Research and Policy*, Ronald Kessler and Paul Stang, editors, Chicago, IL: University of Chicago Press, Spring 2006.

“Prevalence and effects of mood disorders on work performance in a nationally representative sample of U.S. workers” (with RC Kessler, HS Akiskal, M Ames, HG Birnbaum, RM A, R Jin, KR Merikangas, GE Simon, PS Wang), *American Journal of Psychiatry*. September 2006; 163(9): 1561-8.

“The prevalence and effects of adult attention deficit/hyperactivity disorder on work performance in a nationally representative sample of workers” (with RC Kessler, L Adler, M Ames, RA Barkley, HG Birnbaum, JA Johnston, T Spencer, TB Ustun), *Journal of Occupational and Environmental Medicine*. June 2005; 47(6): 565-72.

“Measuring Productivity,” invited workshop presentation at the Annual Meeting of *ISPOR*, 2001.

“The Effects of Chronic Medical Conditions on Work Loss and Work Cutback” (with RC Kessler, K Mickelson, L Meneades, P Wang), *Journal of Occupational and Environmental Medicine*. 2001; 43(3): 218-225.

“Using Linked Administrative Data to Measure the Burden of Illness in the Workplace,” invited talk at the *International Health & Productivity Conference, Health Enhancement Research Organization (HERO)*, February 2001.

“Impact of Illness and Its Treatment on Workplace Costs: Regulatory and Measurement Issues” (with HG Birnbaum, RC Kessler, M Morgan, P Stang), *Journal of Occupational and Environmental Medicine*. 2001; 43(1): 56-63.

“Linking Data to Determine Productivity Impact of Disease: What To Do,” Marketing Outcomes to Employers panel, invited moderator at the Annual Meeting of the *DIA*, June 2000.

“A Unified Approach to Medical and Workplace Costs of Illness: Linking the Datasets,” invited speaker at the *National Managed Health Care (NMHC) Congress*, April 2000.

Presentation to the Food & Drug Administration (FDA) concerning measurement issues to consider in formulating industry guidance with respect to productivity claims, January 2000.

“Comparative Burden of Illness at Two Large U.S. Companies” (with HG Birnbaum, S Wogen, M Holland, PO Deverka, R Epstein), poster presented at the Annual Meeting of *ISPOR*, 2000.

“Disease Management: A Unified Approach to Managing Disability and Medical Costs” invited speaker at Rehearsing Your Future: Health People, Healthy Companies, the *13th Annual National Disability Management Conference & Exhibit*, Washington Business Group on Health, October 1999.

“Tackling Costs One Disease at a Time” (with M Barton, HG Birnbaum, PY Cremieux, M Slavin, F D’Souza, B Auerbach), *Business and Health*. 1999; 17(5): 31-37.

“Impact of Illness and Its Treatment on Workplace Productivity,” invited talk at CentraLink and the Partnership for Behavioral Healthcare, May 1998.

“Calculating Return on Investment from Reducing Workplace Costs of Illness” (with A Baker, E Berndt, S Finkelstein, J Russell), *Drug Benefit Trends*, 1998.

“The Next Phase of Managed Care: Targeting Investments in Employee Health” (with E Berndt, S

Finkelstein), *On Managed Care*, 1997.

“Impact of Illness and Its Treatment on Workplace Productivity,” invited speaker at *Workforce 2000: An Agenda for Improved Health*, September 1997.

“Illness and Productivity: Objective Workplace Evidence” (with H Bailit, E Berndt, S Finkelstein, A Keith), working paper, MIT Program on the Pharmaceutical Industry, WP #42-97, May 1997.

“Behavioral Risk Reduction and Performance Enhancement in Action,” invited speaker at the *Employer Summit on Productivity and Behavioral Risk Management*, May 1997.

“The Opportunity Cost of Chronic Illness in the Workplace – Mapping the Landscape” (with E Berndt, S Finkelstein, A Keith, M Moore), working paper, MIT Program on the Pharmaceutical Industry, WP #40-97, March 1997.

“Impact of Illness and Its Treatment on Workplace Productivity,” invited speaker at MIT and Pfizer’s *Conference on the Competitive Advantage of a Healthy Workforce*, November 1996.

“Health and Worker Productivity,” invited speaker at the Annual Meeting of the *Health Economics Roundtable*, National Association of Business Economists, September 1996.

“Objective Evidence of the Effects of Health Status on Worker Productivity,” invited speaker at the Work and Health Symposium at the *International Health Economics Association* Annual Meeting, May 1996.

“Calculating the Workplace Cost of Chronic Disease” (with S Finkelstein and E Berndt), *Business and Health*, 1995.

“Economic Consequences of Illness in the Workplace” (with S Finkelstein, E Berndt), *Sloan Management Review*, Summer 1995.

“New Frontiers of Pharmacoeconomics – Workplace Costs as a Health Economic Outcome,” invited speaker at the Annual Meeting of the *AMCP*, May 1995; invited speaker at the *NMHC Congress*, April 1995; and invited speaker at *Pharmacoeconomics: How to Successfully Integrate Pharmacoeconomic Studies with Electronic Trials and Disease State Management*, March 1995.

“The Hidden Costs of Illness in the Workplace,” invited speaker at the Employer Executive Track and Behavioral Health Track event, *NMHC Congress*, April 1994.

“Pharmacoeconomics and Health Policy: Current Applications and Prospects for the Future” (with A Arcelus, HG Birnbaum, PY Cremieux, J LeLorier, P Ouellette, M Slavin), invited paper for *PharmacoEconomics*, November 1999.

“Using Health Care Claims Data for Outcomes Research and Pharmacoeconomic Analyses” (with HG Birnbaum, PY Cremieux, J LeLorier, L Venditti), invited paper for *PharmacoEconomics*, July 1999.

“The Valuation Process: Using Health Outcomes Research to Determine if Your Product Is Cost Effective” (with PY Cremieux and G Jetley), invited conference speaker at the *Medical Device Technology Finance & Investment* event, April 1999.

“Applications of Pharmacoeconomics: Current Practice and Cutting Edge Techniques” (with S Finkelstein), invited speaker at a conference on *Management for Physicians, Scientists and Engineers in the Pharmaceutical & Biotechnology Industry*, Massachusetts Institute of Technology. June 1994, 1995, 1996.

### **Other Economic Issues in the Health Care Sector**

“Comparison of Systematic Literature Review Inclusion Criteria and the Impact on Evidence-Based Treatment Recommendations: A Parkinson’s Disease Psychosis Case Study” (with K Cook, K Adamski, D Nellesen, A Chawla), *AMCP Nexus Conference*, Dallas, TX, October 2017.

*Decision Making in a World of Comparative Effectiveness Research: A Practical Guide*. HG Birnbaum and PE Greenberg, editors, Adis, 2017.

“Perspectives of Comparative Effectiveness Research from the World of Decision Making” (with D Nellesen, HG Birnbaum), in *Decision Making in a World of Comparative Effectiveness Research*, H Birnbaum and P. Greenberg, editors, Adis, 2017.

“Can social media data lead to earlier detection of drug-related adverse events?” (with MS Duh, P Cremieux, MV Audenrode, F Vekeman, P Karner, H Zhang), *Pharmacoepidemiol Drug Safety*. 2016; 25(12): 1425-1433.

“Perspectives on Comparative Effectiveness Research” (with D Nellesen, HG Birnbaum), *Pharmacoeconomics*. 2010; 28(10): 789-798.

“Introducing perspectives on comparative effectiveness research” (with HG Birnbaum), *Pharmacoeconomics*. October 1, 2010; 28(10): 787-8.

“Does Generic Substitution Always Make Sense?” *Journal of Medical Economics*, Fall 2008.

“Assessing Step Therapy/Generic Switching: Clinical and Economic Implications of Acquisition Costs vs. Total Health Care Costs Paradigm” (with EQ Wu and MH Erder), Congressional Budget Office, 2008.

“Generic Competition in the US Pharmaceutical Industry” (with HG Birnbaum, A Saha, H Grabowski, et al.), *International Journal of the Economics of Business*. February 2006; 13(1): 15-38.

“Generic Competition in the Pharmaceutical Industry,” poster presented at the Annual Meetings of *ISPOR* and the *iHEA*, June 2003.

“Pharmaceutical Spending and Health Outcomes in the United States?” (with PY Cremieux, P Ouellette, M Meilleur, S Leong), in *Investing in Health: The Social and Economic Benefits of HealthCare Innovation*, Kent Summers and Irene Farquhar, editors, Elsevier Science Ltd., 2001.

“Consumer Demand for Access to Innovation: Universal Right or Select Privilege?” Invited speaker at the Annual Meeting of the *Canadian Foundation for Pharmacy*, November 1999.

“Price Growth of Prescription Pharmaceutical Preparations: An Update and Extension” (with E Berndt), *Competitive Strategies in the Pharmaceutical Industry*, American Enterprise Institute for Public Policy Research, 1996.

“An updated and extended study of the price growth of prescription pharmaceutical preparations” (with E Berndt), *Competitive Strategies in the Pharmaceutical Industry*. 1995; 35-48.

“Consolidation Is a Tonic for Health Care Providers: Trend Toward Managed Care and Ascent of Information Technology Fuel Restructuring of an Industry” (with P Danzon, L Boothman), *The National Law Journal*, September, 1995.

“Consolidation and Restructuring: The Next Step in Managed Care” (with P Danzon, L Boothman), in *Health Care Management: State of the Art Reviews*, Hanley & Belfus, Inc., September 1995.

“Social Returns to Research and Development in the Pharmaceutical Industry: A Review of the Technological Spillover Literature” (with T Nells, A Arcelus), invited speaker at the *Ad Hoc Economics Meeting of the Pharmaceutical Industry*, June 1994.

“Measuring Price for Voluntary Restraints on Rx Medicine: Reconciling Data in Government and Private Sector Studies,” invited speaker at *Biopharmaceutical Price Restraints in the Purchaser-Driven Market*, International Business Communications, December 1993.

“Price Growth of Prescription Pharmaceutical Preparations: An Update and Extension” (with E Berndt), invited paper at the *Conference on Competitive Strategies in the Pharmaceutical Industry*, American Enterprise Institute for Public Policy Research, Washington, DC, October 1993. Paper also presented at the *Conference on Productivity*, National Bureau of Economic Research (NBER), Cambridge, MA, July 1993, and repeated at the *Ad Hoc Economics Meeting of the Pharmaceutical Industry*, New York, NY, August 1993.

“Economics of Information in the Health Sector,” guest lecturer at master’s course titled *Industrial Economics for Strategic Decisions*, MIT Sloan School of Management, October 1993.

“Emerging Economic Trends in the Health Care Sector: Strategic Implications for the Pharmaceutical Industry,” invited speaker at a conference on *Management for Physicians, Scientists and Engineers in the Pharmaceutical & Biotechnology Industry*, Massachusetts Institute of Technology, June 1993.

*Health Care Reform: The Economic Impact of Managed Competition*, (with P Feldstein, S Hoag, M Egland), Analysis Group Discussion Paper #93-1, March 1993.

## RELATED ACTIVITIES

Consultant to special counsel to the Massachusetts Supreme Judicial Court on operating under the influence (OUI) cases. Provided analytical support in comprehensive review of cases alleging operating under the influence of drugs and alcohol.

Invited Member of Expert Panel or Strategic Advisory Board:

- **MIT Sloan Health Systems Initiative:** Serving on the Advisory Board, 2021
- **Eleos Health:** Serving on the Advisory Board, 2020
- **Sage Therapeutics:** Assisted in reviewing clinical and economic evidence in support of antidepressant compound, 2019
- **Sanofi-Aventis:** Assisted in designing economic support program for antidepressant compound, 2005
- **Pfizer and Pharmacia:** Served on Valdecoxib Outcomes Research Advisory Board, advised on best practices, 2002



- **Aventis (Canada):** Assisted in all aspects of economic analysis of worksite wellness program for cardiovascular fitness, 1996–2002
- **Schering Plough:** Assisted in addressing economic issues concerning allergies in the workplace, organized by *Business & Health* (with conference proceedings posted to its website), 2001
- **Wyeth Ayerst:** Assisted in developing managed care outcomes study to support antidepressant/antianxiety compound, 2000.
- **Merck-Medco:** Assisted in providing training to Client Advisory Group concerning use of pharmacoeconomic tools, 1999–2000.
- **Abbott Laboratories:** Assisted in reviewing and refining economic support program for HIV/AIDS compound, 1999.
- **Pharmacia:** Assisted in reviewing clinical data for antidepressant compound and in developing economic research plan, 1998.
- **Boehringer Ingelheim:** Assisted in developing economic support program for antidepressant compound, 1997–1998.
- **Merck:** Assisted in designing economic support program for antidepressant compound, 1997.
- **Eli Lilly:** Assisted in review and refinement of economic support program for antidepressant compound, 1994.