CRYSTAL T. PIKE
Managing Principal

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Crystal T. Pike specializes in applying her expertise in health economics, outcomes research, and large administrative claims and transaction-level databases to help resolve complex litigation questions and strategic business questions. Her recent experience includes performing economic analyses of off-label drug use, conducting statistical analyses of pharmacy dispensing data, and developing damages models for real-time use in high-stakes negotiations. Ms. Pike has managed a range of health care cases involving valuation analysis of off-label sales; development of statistical algorithms to identify abnormal prescribing and dispensing of controlled substances as well as suspicious orders and/or theft of controlled substances; assessment of business impact associated with various regulatory changes; valuation of pharmaceutical licensing agreements for tax purposes; assessment of arm's length prices for transfer pricing documentation; future lost profits; studies of the cost effectiveness, budget impacts, and direct and indirect costs of illness associated with a variety of diseases; and pricing analyses for large multinational corporations across numerous industries. Ms. Pike has also applied economic theory and empirical estimation methods in a variety of product liability, breach of contract, intellectual property, and transfer-pricing engagements. She has published numerous articles in health care economics and clinical journals.

Examples of Ms. Pike's experience includes:

- Performing economic analyses and presenting findings to investigators from U.S. Attorney's Offices, Attorneys General, and Department of Justice in numerous cases with allegations of off-label promotion, kickback, improper controlled substance distribution, and/or pricing issues in which violations of Food, Drug and Cosmetic Act, False Claims Act, Controlled Substance Act, and/or Anti-kickback statute have been alleged.
- Developing complex statistical algorithms to identify abnormal prescribing and ordering patterns associated with federally controlled prescription drugs, including custom Suspicious Order Monitoring algorithms consistent with 21 CFR 1301.74(b).
- Using large complex data to conduct economic analyses of pharmaceutical products and other medical treatments and providing strategic assistance to counsel at various key points in litigation, including pretrial discovery, settlement negotiations, and trial preparation.
- Cost-of-illness research relating to numerous diseases, as well as pharmacoeconomic assessments of the cost-effectiveness of drugs based on data gathered in clinical trials and administrative claims files.

EDUCATION

M.B.A.	Sloan School of Management, Massachusetts Institute of Technology
B.A.	Economics, Mount Holyoke College

SELECTED LITIGATION CASE ASSIGNMENTS

- **Government investigations concerning distribution and dispensing of controlled substances**
  Provided statistical expertise to Counsel on rebutting government's proposed causation and damages models. Prepared alternative damages models and presented models to government investigators.

- **Government investigations concerning prescription drug and medical device marketing practices, including the following:**
  - AzaSite/Merck (Southern District of New York)
  - Rapamune/Pfizer (Western District of Oklahoma)
  - Lyrica, Zyvox/Pfizer (District of Massachusetts)
  - Bone growth stimulators/Orthofix (District of Massachusetts)
  - Detrol LA/Pfizer (District of Massachusetts)
  - OP-1, Calstrux/Stryker (District of Massachusetts)
  - Protonix/Pfizer (District of Massachusetts)
  - Vyvanse, Adderall/Shire (District of Massachusetts)
  - Risperdal/Johnson & Johnson (Eastern District of Pennsylvania)
  - Zyprexa/Eli Lilly (Eastern District of Pennsylvania)
  - Atrovent, Combivent, Aggrenox/Boehringer Ingelheim (District of Maryland)
  - Keppra/UCB (District of Columbia)
  - Myoview/GE Healthcare (Eastern District of Michigan)
  - Lovaza/GlaxoSmithKline (Office of the Inspector General)

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

- **DEA v. Holiday C.V.S., L.L.C., d/b/a CVS Pharmacy #219 and #5195**
  Submitted expert declarations on behalf of CVS in administrative proceedings before the Drug Enforcement Administration. Testimony included attention to dispensing patterns of certain controlled substances.

- **Daiichi Sankyo**
  Support of damages expert in an international arbitration involving allegations of fraudulent representations in a pharmaceutical acquisition

- **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.

- **Onyx Pharmaceuticals, Inc. v. Bayer Corporation, Bayer AG, Bayer Healthcare LLC, and Bayer Schering Pharma AG**
  United States District Court for the Northern District of California, San Francisco
  Supported economic expert in analyzing future lost profits stemming from breach of contract claims in the area of oncology.

- **Zyprexa Products Liability Litigation**
  United States 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.

- **Grider v. Keystone Healthplan Central et al.**
  United States District Court for the Eastern District of Pennsylvania
  Supported Defendant's liability expert concerning allegations of improper payment for physician services.

PUBLICATIONS AND PRESENTATIONS

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

"Confounding Factors In Off-Label Drug Use," (with Paul Greenberg and Tamar Sisitsky), *Health Affairs*, 31, no.2 (2012):460.

"Healthcare costs and workloss burden of patients with chemotherapy-associated peripheral neuropathy in breast, ovarian, head and neck, and nonsmall cell lung cancer," (with Birnbaum HG, Muehlenbein CE, Pohl GM, Natale RB) *Chemother Res Pract.* 2012; 913848.

"Changes in utilization and costs for patients with rheumatoid arthritis, 1997 to 2006," (with Birnbaum HG, Banerjee R, Waldman T, and Cifaldi M) *Pharmacoeconomics*. 2012 Apr 1; 30(4):323-36.

"Societal cost of rheumatoid arthritis patients in the U.S.," (with Birnbaum H, Kaufman R, Marynchenko M, Kidolezi Y, and Cifaldi M) *Curr Med Res Opin.* 2010 Jan; 26(1):77-90.

"Employer model of workplace impacts of anti-TNF therapy for rheumatoid arthritis," (with Birnbaum H, Pike C, Kaufman R, and Cifaldi M) *J Occup Environ Med.* 2009 Oct; 51(10):1167-76.

"Direct Healthcare and Workloss Burden of Chemotherapy-associated Peripheral Neuropathy in Breast, Ovarian, Head and Neck, and Non-small Cell Lung Cancer," podium presentation at ISPOR 14th Annual International Meeting, Orlando, FL, May 2009.

"Workplace impacts of anti-TNF therapies in rheumatoid arthritis: Review of the literature," (with Birnbaum H, Shi L, Kaufman R, Sun P, and Cifaldi M) *Expert Opin Pharmacother.* 2009 Feb; 10(2):255-69.

"The economic consequences of irritable bowel syndrome: A U.S. employer perspective," (with Leong SA, Barghout V, Birnbaum HG, Ben-Hamadi R, Frech F, and Ofman JJ) *Arch Intern Med.* 2003 Apr 28; 163(8):929-35.

"Location Savings - A U.S. Perspective," (with Steven N Allen, Joy Dasgupta, Jessica H Rosenbloom, Rahul Tomar, Alden J Woodrow, and Deloris R. Wright) International Transfer Pricing Journal, Volume 11, Number 4, 2004.

"United States: Cost Sharing, Services and Intangibles: Recent Changes in Transfer Pricing Regulations," (with Nabeel Anwar, Jennifer V Droubay, Jessica Rosenbloom, Rahul Tomar, and Deloris Wright) International Transfer Pricing Journal, Volume 11, Number 1, 2004.