

## CURRICULUM VITAE

Date Updated: 27 February 2015

**NAME:** Wayne A. Ray, Ph.D.

**OFFICE ADDRESS:** Department of Preventive Medicine  
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### **EDUCATION:**

College: University of Washington B.S. 1971  
(Magna Cum Laude)  
Major: Mathematics

Graduate: Vanderbilt University M.S. 1974  
Major: Biostatistics

Vanderbilt University Ph.D. 1981  
Major: Computer Science

### **ACADEMIC APPOINTMENTS:**

Vanderbilt University School of Medicine, Nashville, Tennessee  
Department of Preventive Medicine  
Research Associate, 1974-75  
Research Instructor, 1975-78  
Research Assistant Professor, 1979-83  
Director, Computer Facility, 1980-present  
Assistant Professor, 1984-85  
Director, Division of Pharmacoepidemiology, 1984-2013  
Associate Professor (tenured), 1985-1990  
Professor (tenured), 1991-present  
Director, Master of Public Health Program, 1996-2010

Veterans' Administration Tennessee Valley Healthcare System, Nashville, Tennessee  
GRECC, Associate Director for Health Services Research, 2001-2008

## **INTRAMURAL COMMITTEES:**

Vanderbilt University Medical Records Committee, 1977  
School of Medicine Appointments and Promotions Committee  
1991-1997  
School of Medicine Appointments and Promotions Review Committee  
2003-2008  
2004-2008, Chair

## **PROFESSIONAL ORGANIZATIONS, CURRENT:**

International Society for Pharmacoepidemiology  
Society for Epidemiologic Research  
American Epidemiological Society

## **ACADEMIC OR PROFESSIONAL HONORS:**

Phi Beta Kappa, 1972  
Society of Sigma Xi, 1977  
Burroughs Wellcome Scholar in Pharmacoepidemiology, 1984-1989  
American Epidemiologic Society, 1990  
Fellow of the International Society for Pharmacoepidemiology, 2004  
Innovation in Teaching Award, Vanderbilt School of Medicine, 2004  
William J. Darby Research Award for Translational Research that has Changed the Practice of Medicine Worldwide, 2015

## **TEACHING:**

Preventive Medicine Course for second-year medical students, lecturer and seminar leader

Research Training, didactic lectures on the appropriate use of epidemiologic methods in biomedical research

Invited Presentations for academia, government, and industry; epidemiology and pharmacoepidemiology (6-12/year, those of particular note listed below)

Instructor (Automated Databases), UNC Pharmacoepidemiology Course, 1988-2002

Director, Pharmacoepidemiology fellowship program, 1989-1992

Instructor (Automated Databases), Yale Pharmacoepidemiology Course, 1993-2002

Tufts University/New England Epidemiology Institute, Summer Program in Epidemiology, Pharmacoepidemiology Course, 1993-2001

International Society for Pharmacoepidemiology, Short Course: Automated Databases, 2002, 2005

Director and Founder, Master of Public Health program, Department of Preventive Medicine, Vanderbilt University School of Medicine, 1996-present

Instructor, Master of Public Health program:

Epidemiology 2	1997-present
Program/Policy Evaluation	1997-2013
Decision Analysis	1998
Introduction to Clinical Research	1997, 1999
Grant Writing	2000-2013
Protocol Development	2004-2010

### TRAINING/RESEARCH SUPERVISION:

1973-1975	John Brocklebank, Ph.D.	M.S. Biostatistics
1985-1986	Joyce Piper, Ph.D.	Faculty training: record linkage
1989	Mike Lichtenstein, M.D., M.S.	Faculty training: record linkage
1990-1991	Ron Shorr, M.D., M.S.	Pharmacoepidemiology Fellow NIH K08 Award
1990-1991	Puru Thapa, M.B.B.S.	Pharmacoepidemiology Fellow
1993-1994	Wally Smalley, M.D., M.P.H.	Pharmacoepidemiology Fellow AGA Faculty Development Award
1994-1995	Keith Meador, M.D, M.P.H.	Pharmacoepidemiology Fellow
1994-1996	Amy Lynch, M.D.	Pediatric Critical Care Fellow
1996	Seth Scholer, M.D., M.P.H.	Faculty training:injury epidemiology
1996	Bill Cooper, M.D., M.P.H.	General Pediatrics Fellow (K award)
1998-2000	Sarah Meredith, MBBS	Epidemiologist
2002-2004	Todd Hulgan, M.D., M.P.H.	Infectious Disease Fellow (K award)
2004-2006	Benji Kurian, M.D., M.P.H.	Psychiatry Resident
2006-2008	Cecilia Chung, M.D., M.P.H	Rheumatology, Clinical Pharmacology Fellow
2008-2012	William Bobo, M.D.	Psychiatry, Assistant Professor (K award)
2010-2012	Richard Epstein, Ph.D.	Psychiatry, Assistant Professor
2011-2015	Cecilia Chung, M.D., M.P.H.	Rheumatology, Instructor (K award)
2014-2015	Qi Liu	Biostatistics, Ph.D. Candidate

## **MPH THESIS COMMITTEES:**

Bill Cooper, M.D.	1996-1997
Tom Leonard-Martin, Ph.D.	1996-1997
Michael Holzman, M.D.	1996-1998
Michael Higgins, M.D.	1996-1998
Walter Smalley, M.D.	1996-1998
Esther Eisenberg, M.D.	1999-2000
Selwyn Rogers, M.D.	2000-2001
Lena Khatin, M.D.	2000-2001
Steve Rafanti, M.D.	2000-2001
Connie Haley, M.D.	2000-2001
Susan Marlow, M.D.	2002-2003
Benji Kurian, M.D.	2004-2005
William Bobo, M.D.	2009-2010

## **PHD THESIS COMMITTEES:**

Greg Tarquinio, MBA	2000-2001
Qui Liu	2014-2015

## **MANUSCRIPT REVIEWER:**

*New England Journal of Medicine*  
*Journal of the American Medical Association*  
*Lancet*  
*Science*  
*Annals of Internal Medicine*  
*British Medical Journal*  
*Circulation*  
*American Journal of Medicine*  
*American Journal of Epidemiology*  
*Journal of Clinical Epidemiology*  
*Epidemiology*  
*Journal of the American Geriatrics Society*  
*Journal of Gerontology: Medical Sciences*  
*The Gerontologist*  
*American Journal of Public Health*  
*Statistics in Medicine*  
*Medical Care*  
*Chest*  
*Journal of Clinical Psychopharmacology*  
*Bone and Mineral Research*  
*Neuron*

## **EXTRAMURAL COMMITTEES, ADVISORY BOARDS, INVITED SPEAKER:**

Member, Tennessee Department of Public Health Perinatal Advisory Committee:  
Subcommittee on Data, 1979-1988

Advisor, Health Care Financing Administration, DHHS Uniform Medicaid Database  
Program, 1981-1991

Member, NIH Fogarty International Center Task Force on Information and Education as  
Determinants of Antibiotic Use, 1984

Ad Hoc Advisor, World Health Organization Symposium on Psychopharmacology and the  
Child, 1984

Member, Hartford Foundation National Advisory Committee on Medications and the  
Elderly, 1985-1992

Invited Speaker, Surgeon General's Workshop on Health Promotion and Aging, Injury  
Prevention Working Group, 1988

Reviewer (special) Epidemiology and Disease Control Study Section, National Institutes  
of Health, 1988, 1989, 1991

Invited Speaker, Workshop on Reducing Frailty and Fall-Related Injuries in Older  
Persons National Institute on Aging, National Center for Nursing Research, Centers for  
Disease Control, 1988

Chair, Special Study Section, Human Development and Aging, National Institutes of  
Health, 1988

Member, Burroughs Wellcome Fund Pharmacoepidemiology Advisory Committee,  
1989-1990

Invited Speaker, National Academy of Sciences, Institute of Medicine, Forum on Drug  
Development and Regulation, Drug Development and Aging Populations, 1989

Invited Speaker, National Academy of Sciences, Institute of Medicine, Effectiveness of  
Hip Fracture Therapy Workshop, 1989

Invited Speaker, Workshop on Research and Development Needed to Improve Safety and  
Mobility of Older Drivers, National Institute on Aging, Centers for Disease Control,  
Federal Highway Administration, and National Highway Traffic Safety Administration,  
1989

Reviewer, Injury Research Project Grant Review Panel, Centers for Disease Control,  
1989, 1992

Member, National Academy of Sciences, Transportation Research Board, Task Force on Safety and Mobility of Older Drivers, 1990-1993

Visiting Professor, McGill University, Department of Epidemiology, 1992

Study Section Member, Injury Research Grant Review Committee, Centers for Disease Control, 1992-1997, Chaired Sessions: 4/94, 1/95, 2/96

Member, Consensus Development Panel, *Helicobacter pylori* in peptic ulcer disease, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, 7-10 February 1994

Invited Speaker, FDA *Vaccines and Related Biological Products Advisory Committee*, 24 August 1994

Member, Armed Forces Working Group on Injury Prevention, 1994

Invited Speaker, American Pharmaceutical Association, Consensus Conference on Outcomes of Pharmaceutical Care, October 1994

Invited Speaker, Institute of Medicine Forum on Drug Development, October 1994

Invited Speaker, Food and Drug Administration, Symposium: *Comparing Treatments: Safety, Effectiveness and Cost-Effectiveness*, March 1995

Keynote Speaker, Canadian Pharmacoepidemiology Forum, April 1996

Invited Speaker, Institute of Medicine Forum on Drug Development, May 1997

Member, National Institute on Aging, Special Study Section, November 1997, April 1998, June 1999

Study Section Member, NIH: National Institutes of Mental Health, Health Services 1999-2000

External Advisory Committee, Harborview Injury Prevention and Control Center, Seattle, 2000-2002

Ad Hoc Advisory Committee Member, FDA Vaccine and Related Biologic Products Advisory Committee, January 2001

Invited Speaker, CDC Conference on Birth Defects, Washington, D.C., August 2001

Invited Speaker, AHRQ National User Conference: Medicaid Drug Policy, Denver, November 2001

Invited Speaker, International COX2 Working Group, Rome, Italy, December 2002

Invited Speaker, Institute of Medicine, Committee on the Assessment of the U.S. Drug Safety System, February 2006.

Visiting Professor, FDA, NSAID+PPI vs coxib, October 2006.

Invited Speaker, Institute of Medicine's Workshop, Redesigning the Clinical Effectiveness Research Paradigm, December 2007.

Invited Speaker, FDA Psychopharmacology Advisory Committee, Quetiapine, April, 2009.

Visiting Professor, FDA, Clopidogrel, June 2009.

Invited Speaker, Society for Epidemiologic Research, Automated Databases, June, 2010.

Invited Speaker, UNC Harry Guess Memorial Lecture, March, 2011.

## **RESEARCH GRANTS and Contracts:**

### **Principal Investigator**

- |           |  |
|-----------|--|
| 1979-1981 | Prescribing of Psychotropic and Narcotic Drugs for Children, National Center for Health Services Research (\$96,177) |
| 1984-1987 | Drug Safety Review: Health Services Research Methodology, National Center for Health Services Research (\$293,328)   |
| 1985-1988 | Multi-State Medicaid Postmarketing Surveillance Studies, Food and Drug Administration (\$378,309)                    |
| 1984-1989 | Burroughs Wellcome Scholar in Pharmacoepidemiology Award (\$250,000)   |
| 1985-1987 | Neurologic Sequelae of DTP Immunizations, Centers for Disease Control (\$291,296)                                    |
| 1987-1989 | Fall-Related Fractures and Use of Medications, Centers for Disease Control (\$215,399)                               |
| 1988-1990 | Hip Fracture Risk and Use of Prescribed Medications, National Institute on Aging (\$225,296)                         |
| 1988-1991 | Medicaid Postmarketing Surveillance Studies, Food and Drug   |

- Administration (\$619,450)
- 1989-1991 Benzodiazepines and Motor Vehicle Crashes in the Elderly, Centers for Disease Control (\$364,180)
- 1989-1992 Ciba Geigy Fellow in Pharmacoepidemiology Program, Ciba Geigy Corporation (\$384,000)
- 1990-1992 An Educational Intervention to Reduce Nursing Home Antipsychotic Drug Use, John A. Hartford Foundation (\$587,510)
- 1991-1994 Maternal Drug Use and Risk of Childhood Cancer National Cancer Institute (\$642,866)
- 1991-1994 Medicaid Postmarketing Surveillance Studies, Food and Drug Administration (\$841,193)
- 1992-1995 Preventing Falls in the Nursing Home, Centers for Disease Control (\$780,000)
- 1993-1998 Improving Outcomes in Elderly NSAID Users, Agency for Health Care Policy Research (\$2,408,000)
- 1994-1997 Medicaid Postmarketing Surveillance Studies, Food and Drug Administration (\$924,000)
- 1994-1997 Comparative Toxicity of Antidepressants in Nursing Home Elderly, Centers for Disease Control (\$694,000)
- 1994-1998 Improving Pharmacotherapy in Home Health Patients, John A. Hartford Foundation (\$1,272,000)
- 1997-1998 Medications and Sudden Death, Jansen Foundation, (\$261,930)
- 1997-1998 Medicaid Postmarketing Surveillance Studies, Food and Drug Administration (\$308,000)
- 1998-1999 The Fall Prevention Program, Beverly Corporation (\$153,925)
- 1998-2001 The Tennessee Fall Prevention Program, Centers for Disease Control and Prevention, (\$857,000)
- 1998-2001 Medicaid Postmarketing Surveillance Studies, Food and Drug Administration (\$900,000)
- 1999-2001 Clinical Outcomes of a Mental Health CarveOut, National Institute of



	Mental Health (\$268,435)
1999-2002	Center for Education and Research in Therapeutics (CERTs), Agency for Health Care Quality (\$1,600,000)
2001-2004	Medicaid Postmarketing Surveillance Studies, Food and Drug Administration (\$900,000)
2002-2007	Center for Education and Research in Therapeutics (CERTs), Agency for Health Care Quality (\$4,000,000)
2005-2007	Safety of NSAIDs/Coxibs in Patients with Coronary Heart Disease, Pfizer Pharmaceuticals (\$700,000)
2005-2010	Medications and the Risk of Sudden Cardiac Death, National Heart, Lung, and Blood Institute (\$1,500,000)
2005-2010	Medicaid Postmarketing Surveillance Studies, Food and Drug Administration (\$1,600,000)
2005-2006	CERTs Supplement: GI Outcomes of NSAID+PPI vs coxib, Agency for Health Care Quality and Research (\$140,000).
2007-2011	Center for Education and Research in Therapeutics (CERTs), Agency for Health Care Quality and Research (\$3,900,000)
2008-2011	CERTs Targeted Topics (subcontract with Rutgers): Safety of Antipsychotics in Children, Agency for Health Care Quality and Research (\$500,000).
2010-2015	Medicaid Postmarketing Surveillance Studies, Food and Drug Administration (\$1,600,000)
2011-2016	Medications and the Risk of Sudden Cardiac Death, National Heart, Lung, and Blood Institute (\$1,500,000)
2013-2017	Preventing Gastroduodenal Bleeding in Oral Anticoagulant Users, National Heart, Lung, and Blood Institute (\$2,058,000)
2013-2018	Prescribed Opioid Safety in Children, National Institutes of Child Health and Human Development (\$2,800,000)

## **Coinvestigator**

- 1976-1978 Effect of Intervention in Physician Prescribing, National Center for Health Services Research
- 1977-1979 Legend Drug Use Among the Aged, Social Security Administration-Health Care Financing Administration
- 1979-1983 Methods to Improve Quality of Physician Prescribing: A Demonstration and Evaluation Project, National Center for Health Services Research
- 1983-1984 Persistence of Improvement in Physician Prescribing, National Center for Health Services Research
- 1984-1986 Evaluation of Alternative Health Care Plans, Robert Wood Johnson Foundation
- 1984-1987 Studies in Experimental Fungal Infections in the Eye, National Institutes of Health
- 1992-1995 Evaluating Medicaid Expansions, Health Care Financing Administration
- 1992-1994 Academic Award (K-08) for Ronald I. Shorr, M.D., National Institute of Aging, Primary Faculty Mentor
- 1993-1996 Nonsteroidal Anti-inflammatory Agents and Renal Failure, National Institutes of Health
- 1999-2003 Robert Wood Johnson Generalist Physician Faculty Scholar, William Cooper, M.D., Primary Faculty Mentor
- 2000-present Training in Clinical Research (K-30), National Heart Lung and Blood Institute, Associate Director for Epidemiology
- 2000-present Geriatric Research, Education, and Clinical Center (GRECC), Robert Dittus, Veteran's Administration
- 2000-2003 Population Impact of Vaccine Preventable Diseases, Marie Griffin, Centers for Disease Control
- 2000-2002 Effect of Enrollment Gaps on Clinical Outcomes of Childhood Asthma, William Cooper Agency for Healthcare Quality and Research
- 2002-2004 Fetal Effects of Antibiotics, William Cooper, Food and Drug Administration

- 2003-2006 Independent Scientist Award (K-02), Agency for Healthcare Quality and Research, William Cooper, M.D., Senior Mentor
- 2008-2011 SSRI Antidepressants and Risk of Suicide in Adolescents. William Cooper, National Institutes of Mental Health
- 2008-2013 Vanderbilt Multidisciplinary Clinical Research Center (P60), Charles M. Stein, National Institute of Arthritis and Musculoskeletal and Skin Diseases
- 2013-2017 Mentored Scientist Award (K 23), Cecilia Chung, National Institute of Arthritis and Musculoskeletal and Skin Diseases
- 2013-2018 Drug Metabolism Genotypes in Clinical Practice (R01), Charles M. Stein, National Institutes of Health,

## **PUBLICATIONS:**

### **Articles in refereed journals**

1. Federspiel CF, **Ray WA**, Schaffner W. Medicaid records as a valid data source: The Tennessee experience. *Med Care* 1976;14:166-172.
2. **Ray WA**, Federspiel CF, Schaffner W. Prescribing of chloramphenicol in ambulatory practice: An epidemiologic study among Tennessee Medicaid recipients. *Ann Int Med* 1976;84:266-270.
3. **Ray WA**, Federspiel CF, Schaffner W. Prescribing of tetracycline to children less than 8 years old: A two-year epidemiologic study among ambulatory Tennessee Medicaid recipients. *JAMA* 1977;237:2069-2074.
4. **Ray WA**, Brocklebank JC, Federspiel CF. Computerized system for the identification of the ingredients of proprietary compounds. *Am J Hosp Pharmacy* 1977;34:847-849.
5. **Ray WA**, Federspiel CF, Schaffner W. The mal-prescribing of liquid tetracyclines preparations. *Am J Pub Health* 1977;67:762-763.
6. Brocklebank JC, **Ray WA**, Federspiel CF, Schaffner W. Drug prescribing during pregnancy: A controlled study of Tennessee Medicaid recipients. *Am J Obstet Gynecol* 1978;132:235-244.
7. Schaffner W, **Ray WA**, Federspiel CF. Surveillance of antibiotic prescribing in office practice. *Ann Int Med* 1978;89(part 2):796-799.
8. **Ray WA**, Federspiel CF, Schaffner W. A study of antipsychotic drug use in nursing homes: Epidemiologic evidence suggesting misuse. *Am J Pub Health* 1980;70:485-491.

9. Hughes GB, Forrest A, Glasscock ME, Jackson CG, **Ray WA**, Sismanis A. Clinical Electroneurography: Statistical analysis of controlled measurements in twenty-two normal subjects. *Laryngoscope* 1981;91:1834-1846.
10. Blazer D, Federspiel CF, **Ray WA**, Schaffner W. The risk of anticholinergic toxicity in the elderly: A study of prescribing practices in two populations. *J Gerontology* 1983;38:31-35.
11. Schaffner W, **Ray WA**, Federspiel CF, Miller WO. Improving antibiotic prescribing in office practice: A controlled trial of three educational methods. *JAMA* 1983;250:1728-1732.
12. O'Day DM, **Ray WA**, Robinson R, Head WS. Efficacy of antifungal agents in the cornea: II. Influence of corticosteroids. *Invest Ophthalmol Vis Sci* 1984;25:331-335.
13. O'Day DM, **Ray WA**, Head WS, Robinson R. Efficacy of antifungal agents in the cornea: IV. Amphotericin B methyl ester. *Invest Ophthalmol Vis Sci* 1984;25:851-854.
14. O'Day DM, **Ray WA**, Head WS, Robinson R. Influence of the corneal epithelium on the efficacy of topical antifungal agents. *Invest Ophthalmol Vis Sci* 1984;25:855-859.
15. **Ray WA**, O'Day DM, Head WS, Robinson R. Variability in isolate recovery rates from multiple and single breeds of outbred pigmented rabbits in an experimental model of *Candida* keratitis. *Current Eye Research* 1984;3:949-953.
16. **Ray WA**, O'Day DM. Statistical analysis of multi-eye data in ophthalmic research. *Invest Ophthalmol Vis Sci* 1985;26:1186-1188.
17. **Ray WA**, O'Day DM, Head WS, Robinson R. Statistical analysis for experimental models of ocular disease: Continuous response measures. *Current Eye Research* 1985;4:585-597.
18. Tendera MP, Campbell WB, Tennant SN, **Ray WA**. Factors influencing probability of reperfusion with intracoronary ostial infusion of a thrombolytic agent in patients with acute myocardial infarction. *Circulation* 1985;71:124-128.
19. Nakamura K, Goto F, **Ray WA**, McAllister CB, Jacqz E, Wilkinson GR, Branch RA. Interethnic differences in genetic polymorphism of debrisoquine and mephenytoin hydroxylation between Japanese and Caucasian populations. *Clin Pharmacol Ther* 1985;38:402-408.
20. **Ray WA**, Schaffner W, Federspiel CF. Persistence of improvement in antibiotic prescribing in office practice. *JAMA* 1985;253:1774-1776.

21. **Ray WA**, Fink R, Schaffner W, Federspiel CF. Improving antibiotic prescribing in outpatient practice: Nonassociation of outcome with prescriber characteristics and measures of receptivity. *Med Care* 1985;23:1307-1313.
22. **Ray WA**, Schaffner W, Federspiel CF. Differences between female and male children in the receipt of prescribed psychotropic and controlled-analgesic drugs: A five-year epidemiologic study. *Med Care* 1986;24:801-813.
23. **Ray WA**, Blazer DG, Schaffner W, Federspiel CF, Fink R. Reducing long-term diazepam prescribing in office practice: A controlled trial of educational visits. *JAMA* 1986;256:2536-2539.
24. O'Day DM, **Ray WA**, Robinson R, Head WS. The correlation of *in vitro* and *in vivo* susceptibility of *Candida albicans* to amphotericin B and natamycin. *Invest Ophthalmol Vis Sci* 1987;28:596-603.
25. O'Day DM, **Ray WA**, Robinson R, Head WS. *In vitro* and *in vivo* susceptibility of *Candida* keratitis to topical polyenes. *Invest Ophthalmol Vis Sci* 1987;28:874-880.
26. O'Day DM, **Ray WA**, Robinson RD, Head WS, Savage AM. The influence of yeast growth phase *in vivo* on the efficacy of topical polyenes. *Current Eye Research* 1987;6:363-368.
27. Branch RA, Jackson E, Jacqz E, Stein R, **Ray WA**, Ohnhaus E, Meusers P, Heidemann H. Amphotericin-B nephrotoxicity in humans decreased by sodium supplements with coadministration of ticarcillin or intravenous saline. *Klin Wochenschr* 1987;65:500-506.
28. **Ray WA**, Griffin MR, Schaffner W, Baugh DK, Melton, LJ. Psychotropic drug use and the risk of hip fracture. *N Engl J Med* 1987;316:363-369.
29. **Ray WA**, Federspiel CF, Baugh DK, Dodds S. Impact of growing numbers of the very old on Medicaid expenditures for nursing homes: A multi-state, population-based analysis. *Am J Public Health* 1987; 77:699-703.
30. **Ray WA**, Federspiel CF, Baugh DK, Dodds S. Interstate variation in elderly Medicaid nursing home populations: Comparisons of resident characteristics and medical care utilization. *Med Care* 1987; 25:738-752.
31. Kaisary A, Smith, P, Jacqz E, McAllister B, Wilkinson GR, **Ray WA**, Branch RA. Genetic predisposition to bladder cancer: Ability to hydroxylate debrisoquine and mephenytoin as risk factors. *Cancer Research* 1987;47:5488-5493.
32. **Ray WA**, Blazer DG, Schaffner W, Federspiel CF. Reducing antipsychotic drug prescribing for nursing home patients: A controlled trial of the effect of an educational visit. *Am J Public Health* 1987;77:1448-1450.

33. Stein RS, Magee MJ, Lenox RK, Cousar JB, Collins RD, Flexner JM, **Ray WA**, Greer JP. Malignant lymphomas of follicular center cell origin in man: VI. Large cleaved cell lymphoma. *Cancer* 1987; 60:2704-2711.
34. Griffin MR, **Ray WA**, Schaffner W. Nonsteroidal anti-inflammatory drug use and death from peptic ulcer in elderly persons. *Ann Intern Med* 1988;109:359-363.
35. Griffin MR, **Ray WA**, Livengood JR, Schaffner W. Risk of sudden infant death syndrome (SIDS) after immunization with the diphtheria-tetanus-pertussis (DTP) vaccine. *N Engl J Med* 1988; 319:618-623.
36. Stein RS, Albridge BA, Lenox RK, **Ray WA**, Flexner JM. Nephrotoxicity in leukemic patients receiving empirical amphotericin B and aminoglycosides. *South Med J* 1988;81:1095-1099.
37. **Ray WA**, Griffin MR. The use of Medicaid data for pharmacoepidemiology. *Am J Epidemiol* 1989;129:837-849.
38. **Ray WA**, Griffin MR, Downey W, Melton LJ. Long-term use of thiazide diuretics and the risk of hip fracture. *Lancet* 1989;687-690.
39. **Ray WA**, Federspiel CF, Baugh DK, Dodds S. Experience of a Medicaid nursing home entry cohort. *Health Care Financing Review* 1989;10:51-63.
40. **Ray WA**, Griffin MR, Downey, W. Benzodiazepines of long and short elimination half-life and the risk of hip fracture. *JAMA* 1989;262:3303-3307.
41. **Ray WA**, Griffin MR, West R, Strand L, Melton LJ III. Incidence of hip fracture in Saskatchewan 1976-1985. *Am J Epidemiol* 1990;131: 502-509.
42. Griffin MR, **Ray WA**, Schaffner W, Fenichel GM. Risk of seizures and encephalopathy after immunization with the diphtheria-tetanus-pertussis vaccine *JAMA* 1990;263:1641-1645.
43. Piper JM, **Ray WA**, Griffin MR, Fought R, Daugherty JR, Mitchel E Jr. Methodologic issues in evaluating expanded Medicaid coverage for pregnant women. *Am J Epidemiol* 1990; 132:561-571.
44. **Ray WA**, Griffin MR, Baugh DK. Mortality following hip fracture before and after implementation of the prospective payment system *Arch Intern Med* 1990;150:2109-2114.
45. **Ray WA**, Griffin MR. Prescribed medications and the risk of falling. *Topics Geriatric Rehabilitation* 1990;5(2):12-20.

46. **Ray WA**, Griffin MR, Shorr RI. Adverse drug reactions and the elderly. *Health Affairs* 1990; 9:114-122.
47. O'Day DM, **Ray WA**, Robinson RD, Head WS, Williams TR. Differences in response *in vivo* to amphotericin B among *Candida albicans* strains. *Invest Ophthalmol Vis Sci* 1991;32:1569-1572.
48. O'Day DM, **Ray WA**, Head WS, Robinson RD, Williams TE. Influence of corticosteroid on experimentally induced keratomycosis. *Arch Ophthalmol* 1991;109:1601-1604.
49. Piper JM, **Ray WA**, Griffin MR. Effects of Medicaid eligibility expansion on prenatal care and pregnancy outcome in Tennessee *JAMA* 1990; 2219-2223.
50. **Ray WA**, Griffin MR, Malcom E. Cyclic antidepressants and the risk of hip fracture. *Arch Intern Med* 1991;151:754-756.
51. Griffin MR, **Ray WA**, Mortimer EA, Fenichel GM, Schaffner W. Risk of seizures after Measles-mumps-rubella immunization. *Pediatrics* 1991;88:881-885.
52. Griffin MR, Piper JM, Daugherty JR, Snowden M, **Ray WA**. Nonsteroidal anti-inflammatory drug use and increased risk for peptic ulcer disease in elderly persons. *Ann Intern Med* 1991;114:257-263.
53. Piper JM, **Ray WA**, Daugherty JR, Griffin MR. Corticosteroid use and peptic ulcer disease: Role of nonsteroidal anti-inflammatory drugs. *Ann Intern Med* 1991;114:735-740.
54. **Ray WA**. Thiazide diuretics and osteoporosis: Time for a clinical trial? *Ann Intern Med* 1991;115:64-65.
55. **Ray WA**, Taylor JA, Lichtenstein MJ, Meador K. The nursing home behavior problem scale. *J Gerontology* 1992;47:M9-M16.
56. Griffin MR, Taylor JA, Daugherty JR, **Ray WA**. No increased risk for invasive bacterial infection found following diphtheria-tetanus-pertussis immunization. *Pediatrics* 1992;89:640-642.
57. Shorr RI, Griffin MR, Daugherty JR, **Ray WA**. Opioid analgesics and the risk of hip fracture in the elderly: Codeine and Propoxyphene. *J Gerontology* 1992;47:M111-M115.
58. **Ray WA**, Griffin MR, Fought RL, Adams ML. Identification of fractures from computerized Medicare files. *J Clin Epidemiol* 1992;45:703-714.
59. **Ray WA**, Gurwitz J, Decker MD, Kennedy DL. Medications and the safety of the older driver: Is there a basis for concern? *Human Factors* 1992; 34:33-47.

60. **Ray WA**, Fought RL, Decker MD. Psychoactive drugs and the risk of injurious motor vehicle crashes in elderly drivers. *Am J Epidemiol* 1992;136:873-883.
61. Griffin MR, **Ray WA**, Fought RL, Melton LJ. Black-white differences in fracture rates. *Am J Epidemiol* 1992; 136:1378-1385.
62. Piper JM, **Ray WA**, Rosa FW. Pregnancy outcome following exposure to antihypertensive converting enzyme inhibitors. *Obstet Gynecol* 1992;80:429-432.
63. **Ray WA**. Psychotropic drugs and injuries among the elderly: A review. *J Clin Psychopharm* 1992;12:386-396.
64. **Ray WA**, Taylor JA, Meador KG, Lichtenstein MJ, Griffin MR, Fought R, Adams ML, Blazer DG. Reducing antipsychotic drug use in nursing homes: A controlled trial of provider education. *Arch Intern Med* 1993;153:713-721.
65. Shorr RI, **Ray WA**, Daugherty JR, Griffin MR. Concurrent use of nonsteroidal anti-inflammatory drugs and oral anticoagulants places elderly persons at high risk for hemorrhagic peptic ulcer disease. *Arch Intern Med* 1993;153:1665-1670.
66. Piper JM, Mitchel EF, **Ray WA**. Prenatal use of metronidazole and birth defects: no association. *Obstet Gynecol* 1993; 82:348-352.
67. Shorr RI, **Ray WA**, Daugherty JR, Griffin MR. Reserpine reconsidered: No association with serious peptic ulcer disease. *J Gen Intern Med* 1993;8:510-512.
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