

**Harvard Medical School
Curriculum Vitae**

Date Prepared: December 22, 2011
Name: Mary Beth Landrum
Office Address: Harvard Medical School
180 Longwood Avenue
Department of Health Care Policy
Boston, MA 02115
Work Phone: (617) 432-2460
Work Email: landrum@hcp.med.harvard.edu
Work FAX: (617) 432-2563

Place of Birth: London, England UK

Education

1987	B.S.	Chemical Engineering	Massachusetts Institute of Technology
1992	M.S.	Biostatistics	University of Michigan
1995	Ph.D.	Biostatistics	University of Michigan

Advisor: Mark Becker, Ph.D

Postdoctoral Training

1995-1998	Postdoctoral Fellow	Department of Health Care Policy	Harvard Medical School
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Faculty Academic Appointments

1998-2005	Assistant Professor of Health Policy	Department of Health Care Policy	Harvard Medical School
2005-	Associate Professor of Health Policy	Department of Health Care Policy	Harvard Medical School

Committee Service

Local

1999-2001	Junior Faculty Search Committees <i>Member</i>	Harvard Medical School
2005	Medical Education Design Subgroup <i>Member</i>	Harvard Medical School
2006-2007	Postdoc Advisory Committee <i>Member</i>	Harvard Medical School
2010-2011	Institutional Review Board <i>Alternate Member</i>	Harvard Medical School
2011-	Institutional Review Board <i>Member</i>	Harvard Medical School

National

2000-2004	AMI Performance Measures Writing	American College of Cardiology/American
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	Group <i>Member</i>	Heart Association
2005-2010	Health Services Research Subcommittee <i>Member</i>	Cancer and Leukemia Group B (CALGB)
2005-2006	Adding Clinical Data Elements to Administrative Data <i>Member</i>	Agency for Healthcare Research and Quality (AHRQ)
2005-2006	Quality Indicators Composite Measure Workgroup <i>Member</i>	Agency for Healthcare Research and Quality (AHRQ)
2007-	Evaluating Trends in Old-Age Disability (TRENDS) <i>Member</i>	University of Michigan Center on the Demography of Aging

International

2004-2005	Scientific Planning Committee, 2005 International Conference on Health Policy Statistics <i>Member</i>	American Statistical Association Health Policy Statistics Section
2007-2008	Scientific Planning Committee, 2008 International Conference on Health Policy Statistics <i>Member</i>	American Statistical Association Health Policy Statistics Section
2009-2010	Scientific Planning Committee, 2010 International Conference on Health Policy Statistics <i>Member</i>	American Statistical Association Health Policy Statistics Section
2010-2011	Scientific Planning Committee, 2011 International Conference on Health Policy Statistics <i>Member</i>	American Statistical Association Health Policy Statistics Section

Professional Societies

1995-	International Biometric Society	
	1995-	Member
	2002-2003	Program Committee
1995-	American Statistical Association	
	1995-	Member
	1995-	Member, Health Policy Statistics Section
	1995-	Member, Biometrics Section
	1995-	Member, Bayesian Statistics Section
	2005-2007	Treasurer, Health Policy Statistics Section
	2007-2009	Program Chair, Health Policy Statistics Section
	2011-2013	Chair, Health Policy Statistics Section
2000-	Academy Health	
	2000-	Member

Grant Review Activities

2001-2005	Health Care Technology and Decision Sciences Study Section <i>Member</i>	Agency for Healthcare Research and Quality (AHRQ)
2010	Special Emphasis Panel <i>Member</i>	Agency for Healthcare Research and Quality (AHRQ)
2011	Personalized Medicine Translational Research Fund <i>Member</i>	Ontario Institute for Cancer Research
2011	Special Emphasis Panel <i>Member</i>	National Institute on Aging (NIA)

Editorial Activities

1998-	Ad-Hoc Reviewer	Science
1999-	Ad-Hoc Reviewer	Journal of Health Services Research and Policy
2000-	Ad-Hoc Reviewer	Journal of Clinical Outcomes Management
2000-	Ad-Hoc Reviewer	Journal of the American Medical Association
2000-	Ad-Hoc Reviewer	Health Services and Outcomes Research Methodology
2001-	Ad-Hoc Reviewer	Medical Care
2001-	Ad-Hoc Reviewer	Journal of Health Economics
2002-	Ad-Hoc Reviewer	Statistics in Medicine
2002-	Ad-Hoc Reviewer	International Journal for Quality in Health Care
2002-	Ad-Hoc Reviewer	American Journal of Medicine
2003-	Ad-Hoc Reviewer	Quality of Life Research
2004-	Ad-Hoc Reviewer	Journal of the American Statistical Association
2004-	Ad-Hoc Reviewer	Health Affairs
2005-	Ad-Hoc Reviewer	American Journal of Epidemiology
2005-	Ad-Hoc Reviewer	Inquiry
2008-	Ad-Hoc Reviewer	American Journal of Public Health
2000-2008	Ad-Hoc Reviewer	Health Service Research
2009-	Editorial Board Member	Health Service Research
2008-	Biostatistical Reviewer	Circulation: Cardiovascular Quality and Outcomes

2010-	Biostatistical Reviewer	Journal of Clinical Oncology
2011-	Biostatistical Reviewer	Circulation

Honors and Prizes

1990	Regents Fellowship (full tuition and stipend)	University of Michigan
1991	Dow Chemical Student Prize for performance as a first-year student	Department of Biostatistics, University of Michigan
1992	Dow Chemical Student Prize for performance on Ph.D. qualifying examination	Department of Biostatistics, University of Michigan
1994	Rackham Predoctoral Fellowship (full tuition and stipend)	University of Michigan
1995	Student Travel Award to the Spring Meeting	Eastern North American Region of the International Biometric

Report of Funded Projects

Past

1998-2000	Impact of physician specialty on post-MI care and outcomes. AHCPR, RO1 HS09718 Investigator This study assessed the impact of receiving ambulatory care from primary care physicians and/or cardiologists after an acute myocardial infarction for Medicare beneficiaries.	PI: John Ayanian
1998-2001	Effect of health plans on hypertension and diabetes care. AHCPR/AAHP, U01 HS09936 Investigator This study examined the quality of care provided to patients treated in three managed care setting located in the Minneapolis/St. Paul area.	PI: Ed Guadagnoli
1999-2000	Adjuvant tamoxifen therapy in old age. AHCPR, R01 CA/AG70818 Investigator This study examined the use of adjuvant tamoxifen in a survey of elderly women.	PI: Rebecca Silliman
1999-2002	Organizational determinants of HIV care improvement. AHCPR, R01 HS10408 Investigator The Health Resources and Services Administration required new Title III recipients of Ryan White funds to participate in a continuous quality improvement program. This project assessed the quality of HIV care provided by participating clinics, changes in such care subsequent to quality training, and the organizational characteristics and policies related to such changes.	PI: Paul Cleary
1999-2004	The effect of physician specialty on quality of breast cancer care. Doris Duke Foundation 19990579 Investigator This study examined the effect of primary and specialty care on the diagnosis, treatment and surveillance of elderly patients with breast cancer.	PI: Nancy Keating
1999-2003	Program evaluation of cardiac care programs in the VHA. VA/Price Coopers Waterhouse Investigator The study evaluated quality of care provided by the VA to patients with ischemic heart disease.	PI: Barbara McNeil
2000-2003	Developing quality indicators for advanced cancer care. NIH, R01 CA91753 Investigator This study identified and assessed claims-based indicators of quality of end-of-life care.	PI: Craig Earle
2000-2005	Structuring markets and competition in health care. AHCPR, P01 HS10803	PI: Joe Newhouse

Investigator

This project developed and applied an overarching conceptual framework, drawn from economic theory, for understanding the roles of purchasers, plans, providers, and patients in a market environment characterized by which payer's contract with health plans and plans by capitation.

2001-2003	Managed care penetration and the use of screening mammography by uninsured women. Department of Army, DAMD17-01-0527 Investigator The study examined the association between managed care penetration and rates of mammography among uninsured women between 50 and 65 years of age.	PI: Pushkal Garg
2001-2004	Managed care penetration and cancer care. NIH, R01 CA925880 Investigator This project examined whether managed care penetration was associated with the quality of care and choice of treatments provided the Medicare patients diagnosed with cancer.	PI: Ed Guadagnoli
2001-2005	Modeling treatment use and effectiveness in mental illness. NIH, R01 MH61424 Investigator The study involved a collaboration of statisticians, economists, clinicians and mental health services researchers to develop and apply discrete choice models for understanding treatment use and for causal inferences in experimental and naturalistic studies of mental illness.	PI: Sharon-Lise Normand
2001-2009	Cancer Care Outcomes Research & Surveillance Consortium: Statistical Coordinating Center NIH, 1 U01CA93324 Site PI The CanCORS Statistical Coordinating Center assisted in the refinement of study hypotheses, in the design of data-collection instruments, in the building of data-management tools, in the secure and timely transfer of data from source data sites, provided statistical and administrative support for the primary data collections sites in CanCORS, provided guidance in the analyses of the data, and conducted research into new methods for the analysis of the longitudinal and cross-sectional data arising in studies of patterns of care, access to care for subpopulations, and outcomes in nonrandomized population-based studies.	PI: Dave Harrington
2004-2011	Validating quality indicators for end-of-life cancer care NIH, 2R01CA91753 Investigator This study identified and assessed claims-based indicators of quality of end-of-life care.	PI: Craig Earle
2004-2006	Understanding Disability Among the Elderly. NIH, R01 AG019805 Investigator The specific aims of this study were 1) to document trends in disability in different surveys, and reconcile differences across surveys; 2) to decompose changes in disability into changes in disease prevalence and changes in extent of disability conditional on disease; and 3) to differentiate among alternative economic and social explanations for	PI: David Cutler

declining disability.

2005-2009	Local therapy of breast cancer in community populations. NIH, R01 CA104118 Investigator In this study we used propensity score and instrumental variable techniques to examine survival for up to 10 years after local treatment of breast cancer among community-based cohorts of women living in various regions of the U.S.	PI: Nancy Keating
2005-2010	Study of cancer care in the VA Veterans Health Administration Investigator The specific goals of the program evaluation were to assess the quality and costs of VA cancer care and to identify ways in which it might improve care for patients with one of five cancer sites within the VA.	PI: Barbara McNeil
2005-2007	A pilot survey to measure disability in the elderly population NIH, R21 AG027421 Site PI This study examined alternative measures of disability in a pilot survey of community dwelling elderly in the Boston area.	PI: David Cutler
2006-2008	Improving Medicare hospital performance measures and payment methods Commonwealth Fund Site PI This project examined alternative scoring methods for hospital quality measures currently used by the Center for Medicare Studies	PI: Joel Weissman
Current		
2009-2014	The role of private plans in Medicare NIH, P01AG032952 Investigator The Program Project intends to undertake a fundamental examination of the economics of Medicare Part C, or Medicare Advantage (MA) from a framework grounded in economic theory. The Project is organized around five integrated component projects studying: 1) The factors influencing beneficiary choice of MA plan or traditional Medicare (TM); 2) How MA plans decide about entry and choose the overall generosity of benefits, depending upon Medicare payment policy; 3) Plans' choice of the mix or structure of their benefits in light of possible opportunities for efficiencies from integration and incentives for selection due to imperfect risk adjustment; 4) The consequences (spillovers) of plan choices about entry and practice patterns for beneficiaries in TM and non-Medicare populations; 5) The design optimal payment, regulatory, and informational policies for Medicare to set for MA plans.	PI: Joe Newhouse
2009-2012	Pay for performance in Medicaid: Evidence from the field AHRQ, R01HS017441 Site PI \$79,324	PI: Meredith Rosenthal

This project seeks to increase the evidence base on the implementation and effects of pay for performance in Medicaid by evaluating several prototypical programs adopted by Medicaid agencies in three states and by conducting a survey of the effects of these programs and other market-related influences on physicians that serve relatively larger proportions of Medicaid patients (“Medicaid-focused physicians”).

2010-2016	<p>Economics of Aging: Disability changes in the US elderly population NIH, P01AG005842 Site PI \$457,286</p> <p>This project will examine dimensions of health among the elderly population, and to understand the reasons for health improvement over time. The Harvard University team will contribute expertise in the use of statistical methods to combine individual measures of functioning into domains of health, to model trajectories of health, and to exploit area variation in use of medical technologies and environmental conditions to distinguish between competing explanations for changes in health in the elderly.</p>	PI: David Cutler
2009-2012	<p>Cancer Care Outcomes Research & Surveillance Consortium: Statistical Coordinating Center NIH 2 U01CA93324 Site PI \$498,029</p> <p>The CanCORS Statistical Coordinating Center assists in the refinement of study hypotheses, in the design of data-collection instruments, in the building of data-management tools, in the secure and timely transfer of data from source data sites, provides statistical and administrative support for the primary data collections sites in CanCORS, provides guidance in the analyses of the data, and conducts research into new methods for the analysis of the longitudinal and cross-sectional data arising in studies of patterns of care, access to care for subpopulations, and outcomes in nonrandomized population-based studies.</p>	PI: Dave Harrington
2010-2013	<p>Use of geographic variation to estimate effectiveness with non-randomized data NIH, R01CA142744 PI \$888,480</p> <p>This study will develop, evaluate, and apply advanced statistical methods to estimate the effectiveness of cancer interventions. These goals will be accomplished through the following three specific aims: (1) develop and evaluate statistical methods to estimate treatment effectiveness using geographic residence to mimic randomization to treatment; (2) apply these methods to estimate the comparative effectiveness of interventions for patients diagnosed with colorectal and prostate cancer; and (3) develop and disseminate software to promote the use of appropriate statistical methods in comparative effectiveness studies</p>	PI: Mary Beth Landrum
2010-2013	<p>Accounting for confounding bias and heterogeneity in comparative effectiveness NIH, R01 Investigator</p> <p>This proposal seeks to develop novel approaches for combining data from randomized trials, registries and/or claims-based data (taking advantage of the strengths of both RCT and</p>	PI: James O’Malley

observational data); extend the latest techniques for instrumental variable analysis; and develop novel simultaneous equation models to account for confounding that are less sensitive to assumptions than currently-used methods. In so doing, we will apply these methods to three important clinical examples: treatments for bipolar disorder for patients with psychiatric comorbidity, reformulations of existing psychiatric drug treatments, and the surgical repair for abdominal aortic aneurysm (AAA).

2010-2013

Medicare drug benefits and high cost medications: Antipsychotics under

PI: Vicki Fung

Part D

Kaiser/NIMH

Investigator

Medicare Drug Benefits and High Cost Medications: Antipsychotics Under Part D

Nearly all Medicare Part D drug plans involve substantial and complex patient cost-sharing, including a coverage gap or donut hole. Patients prescribed antipsychotic drug therapy for mental illness may be particularly vulnerable to limited drug coverage; however, little is known about their experiences under Part D. This study will examine the effects of Part D cost-sharing, overall and by psychiatric diagnosis, on drug use, adverse clinical events, and medical spending using comprehensive automated data from before and after the introduction of Part D for a well-defined population of beneficiaries prescribed antipsychotics.

2011-2012

Geographic variation in value for the privately insured population

PI: Michael Chernew

Institute of Medicine

Investigator

A large body of research has documented variation in healthcare spending across geographic areas. Evidence suggests that areas with higher spending do not have systematically better quality of care. Research also documents substantial variation in the utilization of health services. The magnitude of these findings indicates substantial inefficiencies within the system. Most previous research has focused on variation within the Medicare population. We plan to extend this analysis to the commercially insured population in order to obtain a more complete understanding of the causes and implications of geographic variation. Understanding the interplay between Medicare and commercial markets is potentially crucial for successful policy implementation.

Report of Local Teaching and Training

Teaching of Students in Courses

2000-2003	Core Course in Health Policy (lecturer) 20 Graduate Students	Harvard University PhD Program in Health Policy Contact time: 2 hours/year for 4 years Prep time: 4 hours/year for 4 years
2011	Health Policy 3080. Graduate Reading Course: Evaluative Science and Statistics (lecturer) 10 Graduate Students	Harvard University PhD Program in Health Policy Contact time: 10 hours/year Prep time: 10 hours/year

Supervised Trainees:

2000-2001	Mary E. Seddon, Harkins Fellow, Harvard Medical School, Informal advisor on statistical analyses; published one manuscript
2000-2002	Susan Bronskill, PhD Student, Harvard University Informal advisor; published one manuscript
2003-2004	Steven Persell, General Medicine Fellow, Harvard Medical School Informal advisor on statistical analyses; published one manuscript
2003-2008	Kate Stewart, PhD Student, Harvard University Chaired dissertation committee and supervised completion of three dissertation essays; published three book chapters; two manuscripts currently under peer review
2009-2010	Fan Li, Postdoctoral Fellow in Biostatistics, Harvard Medical School Advisor, one manuscript currently under peer review
2010-	Keren Ladin, PhD Student, Harvard University Informal advisor, one dissertation essay in preparation
2010-	Cleo Samuel, PhD Student, Harvard University Informal advisor, one dissertation essay in preparation
2010-2011	Frank Yoon, Postdoctoral Fellow in Biostatistics, Harvard Medical School Advisor, two manuscripts in preparation
2011-	Jaemun Choi, Postdoctoral Fellow in Biostatistics, Harvard Medical School Co-Supervisor, one manuscript in press.
2011-	Alfa Yansane, Postdoctoral Fellow in Biostatistics, Harvard Medical School Primary Supervisor

Local Invited Presentations

1996	Modeling Expert Opinion to Develop Medical	Invited Seminar, Harvard School of
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Boston MA	Guidelines	Public Health Quality of Care Research Seminar
1998 Boston MA	Applying Bayesian Ideas to the Development and Validation of Medical Practice Guidelines	Invited Seminar, Boston University Applied Statistics Colloquium Series
1998 Boston MA	Applying Bayesian Ideas to the Development and Application of Medical Practice Guidelines	Invited Seminar, Harvard School of Public Health, Department of Biostatistics, Bayesian Methodology Working Group
2002 Boston MA	Statistical Approaches to Measuring Quality using Multiple Quality Indicators: Cardiology and Mental Health	Invited Seminar, MGH Divisional Meeting for General Pediatrics
2002 Boston MA	Cross-Sectional Profiles of Medical Providers using Multiple Quality Indicators	Invited Seminar, Harvard School of Public Health, Psychiatric Biostatistics Seminar Series
2003 Cambridge MA	Methodologic Issues in Profiling Medical Providers	Invited Seminar, Harvard University, Research Workshop in Applied Statistics
2005 Boston MA	The Role of Information in Medical Markets: An analysis of Publicly Reported Outcomes in Cardiac Surgery	Invited Seminar, Boston University, Health Statistics Seminar Series
2006 Boston MA	Estimating Causal Effects with Observational Data: A Comparison of Propensity Score and Instrumental Variable Analyses	Invited Seminar, Dana Farber Cancer Institute, Department of Biostatistics Seminar Series
2006 Cambridge MA	Declining Disability: The Role of Intensive Medical Care for Cardiovascular Disease	Invited Seminar, Harvard University, Robert Wood Johnson Fellows in Health Policy Seminar Series
2007 Boston MA	Estimating Causal Effects with Observational Data: A Comparison of Propensity Score and Instrumental Variable Analyses	Invited Seminar, Massachusetts General Hospital, Program in Cancer Outcomes Research Training Seminar Series
2007 Boston MA	Estimating Causal Effects with Observational Data: A Comparison of Propensity Score and Instrumental Variable Analyses	Invited Seminar, Dana Farber Cancer Center, Outcomes and Policy Research Seminar Series

Report of Regional, National and International Invited Teaching and Presentations

Invited Presentations and Courses

Regional

1999 Storrs, CT	Applying Bayesian Ideas to the Assessment of Quality of Care	Invited Seminar, University of Connecticut, Statistics Colloquium Series
2001 Philadelphia, PA	Cross-Sectional Profiles of Medical Providers using Multiple Quality Indicators	Invited Seminar, University of Pennsylvania, Division of Biostatistics
2001 New Haven, CT	Cross-Sectional Profiles of Medical Providers using Multiple Quality Indicators	Invited Seminar, Yale Medical School, Department of Biostatistics
2005 Hanover, NH	The Role of Information in Medical Markets: An Analysis of Publicly Reported Outcomes in Cardiac Surgery	Invited Seminar, Dartmouth University, Rockefeller Center for Public Policy
2005 Washington DC	Estimating Causal Effects with Observational Data: A Comparison of Propensity Score and Instrumental Variable Analyses	Invited Seminar, National Cancer Institute, Cancer Prevention and Control Colloquia Series
2006 Ann Arbor, MI	The Role of Information in Medical Markets: An Analysis of Publicly Reported Outcomes in Cardiac Surgery	Invited Seminar, University of Michigan, Robert Wood Johnson Postdoctoral Fellows in Health Policy Seminar
2006 Washington DC	Declining Disability: The Role of Intensive Medical Care for Cardiovascular Disease	Invited Presentation, National Institute of Aging and Department of Health and Human Services, Assistant Secretary for Planning and Evaluation
2010 Muncie, IN	Strategies for Improving the Robustness of Comparative Effectiveness Research Estimates from Observational Data	Invited Panel Presentation, Midwestern Biopharmaceutical Statistics Workshop
2011 Hanover, NH	Use of Geographic Variation to Infer Treatment Effectiveness	Invited Seminar, Dartmouth University, Rockefeller Center for Public Policy
2011 Portsmouth, NH	Use of Geographic Variation to Infer Treatment Effectiveness	Invited Presentation, NIA Annual Research Meeting
2011 New York, NY	Sensitivity of Instrumental Variable Estimates to Violations of Assumptions	Invited Presentation, Columbia Center for Homelessness Prevention Studies, Methods Workshop on

Instrumental Variables in Health Research,

National

1997 Washington, DC	An Imputation Strategy for the Analysis of Incomplete Longitudinal Data	Invited Presentation, Annual Meeting of the Population Association of America
2001 Atlanta, GA	Profiles of Medical Providers Using Multiple Quality Indicators	Invited Presentation, Joint Statistical Meetings
2004 Toronto, Canada	The Role of Information in Medical Markets	Invited Presentation, Joint Statistical Meetings
2005 Boston, MA	The Role of Information in Medical Markets: An Analysis of Publicly Reported Outcomes in Cardiac Surgery	Invited Presentation, Academy Health Meetings
2007 Ann Arbor, MI	Intensive medical care and cardiovascular disease disability reductions	Invited Presentation, TRENDS network
2008 Ann Arbor, MI	Causes of the decline in disability using the MCBS	Invited Presentation, TRENDS network
2009 Washington, DC	Evaluating Quality Composite Measures	Invited Presentation, Joint Statistical Meetings
2010 Boston, MA	A National Study of Survival in Older Cancer Patients in the Veterans Health Administration versus Fee-for-Service Medical	Invited Presentation, Academy Health Meetings
2011 Ann Arbor, MI	Disability changes in the US elderly population	Invited Presentation, TRENDS network

International

1997 Washington DC	Assessing Quality of Care Following a Heart Attack	Invited Presentation, International Conference of Health Policy Research
1999	Cross-Sectional Profiles of Medical Providers	Invited Presentation, International

Santa Monica, CA	using Multiple Quality Indicators	Conference of Health Policy Research
2003 Chicago, IL	The Role of Information in Medical Markets: An Analysis of Publicly Reported Outcomes in Cardiac Surgery	Invited Presentation, International Conference of Health Policy Research
2005 Boston, MA	Causal Inference in Longitudinal Data: An Analysis of Publicly Reported Outcomes in Cardiac Surgery	Invited Presentation, International Conference on Health Policy Research
2005 Barcelona, Spain	The Impact of Medicare on Health Outcomes and Disparities Among the Elderly	Invited Presentation, International Health Economics Association Meetings
2011 New York, NY	Use of Geographic Variation in Comparative Effectiveness Research	Invited Presentation, International Chinese Society Association Meeting
2011 Stockholm, Sweden	Innovative Methods in Comparative Effectiveness Research	Invited Presentation, Swedish National Board of Health and Welfare

Report of Scholarship

Peer reviewed publications in print or other media

Research Investigations

1. Ayanian JZ, **Landrum MB**, Normand SL, Guadagnoli E, McNeil BJ. Rating the appropriateness of coronary angiography--do practicing physicians agree with an expert panel and with each other? *New England Journal of Medicine*. 1998;338(26):1896-904.
2. **Landrum MB**, Normand SL. Applying Bayesian ideas to the development of medical guidelines. *Statistics in Medicine*. 1999;18(2):117-37.
3. **Landrum MB**, McNeil BJ, Silva L, Normand SL. Understanding variability in physician ratings of the appropriateness of coronary angiography after acute myocardial infarction. *Journal of Clinical Epidemiology*. 1999;52(4):309-19.
4. **Landrum MB**, Bronskill S, Normand SL. Analytic methods for constructing cross-sectional profiles of health care providers. *Health Services and Outcomes Research Methodology*. 2000;1(1):23-48.
5. Guadagnoli E, **Landrum MB**, Peterson EA, Gahart MT, Ryan TJ, McNeil BJ. Appropriateness of coronary angiography after myocardial infarction among Medicare beneficiaries. Managed care versus fee for service. *New England Journal of Medicine*. 2000;343(20):1460-6.
6. **Landrum MB**, Becker MP. A multiple imputation strategy for incomplete longitudinal data. *Statistics in Medicine*. 2001;20(17-18):2741-60.

7. **Landrum MB**, Ayanian JZ. Causal effect of ambulatory specialty care on mortality following myocardial infarction: A comparison of propensity score and instrumental variable analyses. *Health Services and Outcomes Research Methodology*. 2001;2(3-4):221-245.
8. Normand ST, **Landrum MB**, Guadagnoli E, Ayanian JZ, Ryan TJ, Cleary PD, McNeil BJ. Validating recommendations for coronary angiography following acute myocardial infarction in the elderly: a matched analysis using propensity scores. *Journal of Clinical Epidemiology*. 2001;54(4):387-98.
9. Guadagnoli E, **Landrum MB**, Normand SL, Ayanian JZ, Garg P, Hauptman PJ, Ryan TJ, McNeil BJ. Impact of underuse, overuse, and discretionary use on geographic variation in the use of coronary angiography after acute myocardial infarction. *Medical Care*. 2001;39(5):446-58.
10. Keating NL, Weeks JC, **Landrum MB**, Borbas C, Guadagnoli E. Discussion of treatment options for early-stage breast cancer: effect of provider specialty on type of surgery and satisfaction. *Medical Care*. 2001;39(7):681-91.
11. Seddon ME, Ayanian JZ, **Landrum MB**, Cleary PD, Peterson EA, Gahart MT, McNeil BJ. Quality of ambulatory care after myocardial infarction among Medicare patients by type of insurance and region. *American Journal of Medicine*. 2001;111(1):24-32.
12. Gurwitz JH, Guadagnoli E, **Landrum MB**, Silliman RA, Wolf R, Weeks JC. The treating physician as active gatekeeper in the recruitment of research subjects. *Medical Care*. 2001;39(12):1339-44.
13. Cutler DM, Gruber J, Hartman RS, **Landrum MB**, Newhouse JP, Rosenthal MB. The economic impacts of the tobacco settlement. *Journal of Policy Analysis and Management*. 2002;21(1):1-19.
14. Ayanian JZ, Landon BE, **Landrum MB**, Grana JR, McNeil BJ. Use of cholesterol-lowering therapy and related beliefs among middle-aged adults after myocardial infarction. *Journal of General Internal Medicine*. 2002;17(2):95-102.
15. Keating NL, Guadagnoli E, **Landrum MB**, Borbas C, Weeks JC. Treatment decision making in early-stage breast cancer: should surgeons match patients' desired level of involvement? *Journal of Clinical Oncology*. 2002;20(6):1473-9.
16. Bronskill SE, Normand SL, **Landrum MB**, Rosenheck RA. Longitudinal profiles of health care providers. *Statistics in Medicine*. 2002;21(8):1067-88.
17. Ayanian JZ, **Landrum MB**, McNeil BJ. Use of cholesterol-lowering therapy by elderly adults after myocardial infarction. *Archives of Internal Medicine*. 2002;162(9):1013-9.
18. Silliman RA, Guadagnoli E, Rakowski W, **Landrum MB**, Lash TL, Wolf R, Fink A, Ganz PA, Gurwitz J, Borbas C, Mor V. Adjuvant tamoxifen prescription in women 65 years and older with primary breast cancer. *Journal of Clinical Oncology*. 2002;20(11):2680-8.
19. Garg PP, **Landrum MB**, Normand SL, Ayanian JZ, Hauptman PJ, Ryan TJ, McNeil BJ, Guadagnoli E. Understanding individual and small area variation in the underuse of coronary angiography following acute myocardial infarction. *Medical Care*. 2002;40(7):614-26.
20. Ayanian JZ, **Landrum MB**, Guadagnoli E, Gaccione P. Specialty of ambulatory care physicians and mortality among elderly patients after myocardial infarction. *New England Journal of Medicine*. 2002;347(21):1678-86.

21. **Landrum MB**, Normand ST, and Rosenheck RA. Ranking of related multivariate means: Monitoring psychiatric care in the Department of Veterans Affairs. *Journal of the American Statistical Association*. 2003;98(461):7-16.
22. Ganz PA, Guadagnoli E, **Landrum MB**, Lash TL, Rakowski W, Silliman RA. Breast cancer in older women: quality of life and psychosocial adjustment in the 15 months after diagnosis. *Journal of Clinical Oncology*. 2003;21(21):4027-33.
23. Keating NL, **Landrum MB**, Landon BE, Ayanian JZ, Borbas C, Guadagnoli E. Measuring the quality of diabetes care using administrative data: is there bias? *Health Services Research*. 2003;38(6 Pt 1):1529-45.
24. Keating NL, **Landrum MB**, Ayanian JZ, Winer EP, Guadagnoli E. Consultation with a medical oncologist before surgery and type of surgery among elderly women with early-stage breast cancer. *Journal of Clinical Oncology*. 2003;21(24):4532-9.
25. Persell SD, Keating NL, **Landrum MB**, Landon BE, Ayanian JZ, Borbas C, Guadagnoli E. Relationship of diabetes-specific knowledge to self-management activities, ambulatory quality of care, and metabolic outcomes. *Preventive Medicine*. 2004;39:746-752.
26. Keating, NL, **Landrum MB**, Landon BE, Ayanian JZ, Borbas C, Wolf R, Guadagnoli E. The influence of physicians' practice characteristics and satisfaction on quality of care among patients with diabetes. *Medical Care*. 2004;42:829-839.
27. Earle CC, Neville BA, **Landrum MB**, Ayanian JZ, Block SD, Weeks JC. Trends in the aggressiveness of cancer care near the end of life. *Journal of Clinical Oncology*. 2004;22(2):315-21.
28. Landon BE, Wilson, IB, McInnes K, **Landrum MB**, Hirschhorn L, Marsden PV, Gustafson D, Cleary PD. The impact of a quality improvement collaborative on the outcome of care of patients with HIV infection: The EQHIV study. *Annals of Internal Medicine*. 2004;140(11):887-896.
29. Meara E, **Landrum MB**, Ayanian JZ, McNeil BJ, Guadagnoli E. Effect of market share of managed care on appropriate use of coronary angiography among traditional Medicare beneficiaries. *Inquiry*. 2004;41(2):144-158.
30. **Landrum MB**, Guadagnoli E, Zummo R, Chin D, McNeil, BJ. Care following acute myocardial infarction in the Veterans Administration Medical Centers: A comparison with Medicare. *Health Services Research*. 2004;39(6 Pt 1):1773-1792.
31. Keating NL, **Landrum MB**, Ayanian JZ, Winer E, Guadagnoli E. The association of ambulatory care with breast cancer stage at diagnosis among Medicare beneficiaries. *Journal of General Internal Medicine*. 2005;20:38-44.
32. Keating NL, **Landrum MB**, Meara ER, Ganz P, Guadagnoli E. Do increases in the market share of managed care influence quality of care in the fee-for-service sector? *Journal of the National Cancer Institute*. 2005;97:257-264.
33. Landon BE, Wilson IB, McInnes K, **Landrum MB**, Hirschhorn LR, Marsden PV, Cleary PD. Physician specialization and the quality of care for HIV infection. *Archives of Internal Medicine*. 2005;165(10):1133-1139.
34. Earle CC, Neville BA, **Landrum MB**, Souza JM, Weeks JC, Block SD, Grunfeld E, Ayanian JZ. Evaluating claims-based indicators of the intensity of end-of-life cancer care. *International Journal of Quality in Health Care*. 2005;17:505-509.

35. Keating NL, Norredam M, **Landrum MB**, Huskamp H, Meara ER. Physical and mental health status of older long-term cancer survivors. *Journal of the American Geriatric Society*. 2005;53:2145-2152.
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Non-peer reviewed scientific or medical publications/materials in print or other media

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3. **Landrum MB**, Stewart KA, Cutler DM. Heterogeneity in the clinical pathways to disability. In: Health in Older Ages: The Causes and Consequences of Declining Disability Among the Elderly. Chicago IL: University of Chicago;2007. (Wise DA, Cutler DM, eds.)
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5. Cutler DM, **Landrum MB**. Dimensions of health in the elderly population. In: Investigations in the Economics of Aging. Chicago, IL: University of Chicago; forthcoming. (Wise, DA ed.)

Proceedings of meetings

1. Cutler DM, Huckman RS, **Landrum MB**. The role of information in medical markets: An analysis of publicly reported outcomes in cardiac surgery. In: Papers and Proceedings; American Economic Review; 2004. p. 342-346.
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Narrative Report

My primary research interests are the development and application of statistical methodology to answer key policy questions for the aging and for the disabled. This research has several related themes including models to summarize related measurements of quality or outcomes of care and the analysis of observational data to infer effectiveness of medical and policy interventions.

I have developed and applied methodology for measuring quality of care on more than one dimension. The key idea is to simultaneously model a set of quality measure on each provider accounting for correlation of the measures through the introduction of a latent variable that represents the underlying quality of care of the provider. By proposing an integrated analysis of several outcome measures, these techniques provide policy makers and clinicians with a unified framework to assess quality that has more statistical power than individual analyses of each outcome measure. I have applied these methods to measure quality of care in mental health and cardiology and am currently extending these methods to incorporate cancer patients and their surrogate ratings of quality of their care during initial treatment and at the end-of-life. I am also currently expanding these methods to summarize multiple measures of functioning and disability. Using longitudinal national surveys, I am using these methods to track changes in underlying disability across individuals as they age and experience health shocks and in populations to assess and explain trends in health in elderly populations over the past two decades.

I also work on methods for determining the effectiveness of medical and health care interventions in the non-randomized studies. In two evaluations funded by the Department of Veterans Affairs, I compared the care provided to veterans with heart disease and cancer in VA facilities to that provided to comparable Medicare beneficiaries treated in non-VA facilities using propensity score methods. I also compared propensity score and instrumental variable analyses to estimate the effectiveness of ambulatory specialty care following myocardial infarction. Recently I have developed methods for propensity score analyses with hierarchically structured data. Currently, I am the Principal Investigator for an RO1 funded by the National Cancer Institute to use geographic variation in use of cancer treatments to infer the effectiveness of treatments in non-randomized settings. I am also currently leading an aim in my colleague James O' Malley's ARRA funded R01 for methods in comparative effectiveness research. In this aim I am developed methods to assess the robustness of estimates from instrumental variable analyses to violations of key assumptions.

Finally, I have collaborated on a long-line of research examining quality of care and its impact on patient outcomes in aging populations, particularly those with cancer. This work has examined how physician characteristics and their beliefs impact treatment decision after initial cancer diagnosis and at the end-of-life, the development and validation of quality measures for end-of-life care, the effectiveness of cancer treatments, and assessment of patient quality of life after cancer diagnosis.