JOHN HARVEY ("JOVE") GRAHAM, PH.D.
Geisinger Center for Health Research,
100 N. Academy Ave, MC 44-00, Danville, PA 17822-4400

I. EDUCATION

Institution	Major	Degree & Year
Swarthmore College, Swarthmore, PA	Engineering	B.S. 1996
Swarthmore College, Swarthmore, PA	English - Theatre Studies	B.A. 1996
University of California, Berkeley, CA	Mechanical Engineering	M.S. 2000
University of California, Berkeley and San Francisco, CA	Bioengineering	Ph.D. 2002
Johns Hopkins Bloomberg School of Public Health, Summer Institute in Epidemology & Biostatistics, Baltimore, MD	Multilevel Modeling, Biostatistical Analysis of Epidemiologic Data	2011, 2013 [not for degree]

II. WORK EXPERIENCE

Geisinger Health System (2012-present), *Investigator I and Director of Clinical Research Project Development, Center for Health Research, Danville, PA.* Responsibilities include: working with and mentoring clinician investigators in development, design and conduct of research, and facilitating access to data assets of health system (e.g., electronic health record (EHR), billing, claims and other sources); building and managing Virtual Data Warehouse to enable multi-site clinical research collaborations with other health systems; independent research design, analysis and publishing of comparative effectiveness studies of medical treatments.

Geisinger Health System (2012), *Operations Manager, Data Coordinating and Analytic Services, Center for Health Research, Danville, PA.* Supervisory responsibility for team that performs clinical data extraction, recoding and biostatistical analysis to support internal and externally-funded research projects at the Geisinger Center for Health Research and Geisinger Clinic. Management of 8-10 research data analysts/programmers and 2-4 biostatisticians on the team, working with EpicCare electronic health record (EHR), billing, claims and other data sources. This is a 75% appointment, with the remaining 25% as an independent Research Investigator I (see description below).

Geisinger Health System (2006-12), *Research Investigator I, Center for Health Research,* Danville, PA. Responsibilities include research design, analysis, publishing and authorship of grant proposals to support health services research and comparative effectiveness studies of surgical and medical treatments.

- Longitudinal modeling of outcomes from Patient Centered Medical Home (PCMH) initiatives, and currently investigating how variation in PCMH implementation affects outcomes, and PCMH post-discharge outcomes of hip fracture patients.
- Overseeing and designing studies with clinical and surgical departments within Geisinger Health System to collect functional outcomes from patients and examine effects of patient factors and treatment options on outcomes.
- Analysis of longitudinal, observational data from electronic health records and claims databases for causal inference of treatment effects in non-randomized settings.
- Developing methods to retrospectively measure treatment adherence and examine effects on outcomes in hypertension, diabetes, and multiple sclerosis populations.

Food and Drug Administration and Oak Ridge Institute for Science and Engineering (2006-12), *Research Fellow/Staff Fellow*. Through a fellowship program, I provided consultative services to the Food and Drug Administration (FDA) to review pre-market applications to evaluate safety and effectiveness of new spinal implant devices. This was a part-time (20% appointment) consulting position.

Food and Drug Administration (2003-2006), *Mechanical Engineer, Division of Solid and Fluid Mechanics, Office of Science and Engineering Laboratories, Center for Devices and Radiological Health,* Rockville, MD. Responsibilities included review of medical device pre-market applications to evaluate

safety and effectiveness of new devices, evaluation of adverse event reports, development of standard test methods for devices and original laboratory research.

- Member of spine and heart valve review teams, collaborating with surgeons, statisticians, biologists, chemists and engineers to evaluate new devices.
- Provided FDA with technical reviews of over 100 pre-market submissions for spinal fusion and non-fusion devices, orthopedic implants, heart valves and other cardiovascular devices.
- Initiated research program to help agency regulate products related to vertebroplasty, a minimally-invasive treatment for spinal fracture repair, and received $57,000 grant for this research area.
- Frequent communication with device manufacturers via email, phone and face-to-face meetings regarding safety and effectiveness of their products.
- Liaison to ASTM standards committee for writing standard test methods for medical materials and devices.

University of California, Berkeley (1997-2002), *Graduate Student Researcher, Medical Polymers & Biomaterials Group*, Berkeley, CA. Responsibilities included extensive mechanical testing of materials and medical device products (e.g. total joint replacements) to measure mechanical properties such as strength, elasticity, fracture toughness and creep.

- Member of interdisciplinary research team including orthopaedic surgeons, surgical residents and engineers.
- Managed a retrieval laboratory for failure analysis of explanted orthopaedic devices including shoulder and hip replacements.

San Francisco General Hospital (1998), *Research Assistant, Orthopaedic Biomechanics Laboratory*, San Francisco, CA. Responsibilities included software development and experimental design to operate infrared motion-capture system to measure body positions and joint angles of young and elderly subjects during forward-reaching tasks. Development of biomechanical model to correlate joint strength and flexibility with task performance.

University of California, Berkeley (1998), *Research Assistant, Department of Integrative Biology*, Berkeley, CA. Responsibilities included design and construction of experimental apparatus to measure force-elongation (stress-strain) dynamics of individual muscle fibers during stretching. Software development to control motors and collect real-time stress-strain data regarding physiological and mechanical behavior of single-fiber muscle cells.

NSF Laboratory for Research Into the Structure of Matter (1995), *Research Fellow*, Philadelphia, PA. Responsible for dynamic mechanical testing and analysis of prosthetic finger joints to study physiological effects of implantation on mechanical properties. Conducted viscoelastic testing and assisted with animal implant/explant surgeries.

Swarthmore College (1993-94), *Laboratory Assistant, Department of Engineering*, Swarthmore, PA. Responsible for design and assembly of ultrasonic cavitation equipment testing with the goal of developing a flow-through system for water purification by ultrasonically eliminating *E.coli* bacteria. Machined small components including piezoelectric hydrophonic pressure transducers and conducted experiments by running bacteria through the sonicator under varying input conditions.

III. TEACHING EXPERIENCE

Bucknell University, *Adjunct Professor and Invited Guest Lecturer, Department of Biomedical Engineering.* 2006-present. Series of seminars regarding technical standards and FDA regulation of medical devices to students and faculty in the biomedical engineering program, and to students in a junior-level design course.

FDA/CDRH Office of Device Evaluation, *Guest Lecturer, Division of General, Restorative and Neurologic Devices, Orthopedic Devices Branch,* Rockville MD. 2004-2006. Presentations of lectures on

spinal implant testing methods, discussing and explaining a number of the most important standards used for spinal devices. Each lecture consists of a two-hour slide presentation giving an overview and technical details of the testing techniques and safety considerations for each category of device, including extensive question-and-answer sessions with device regulators.

University of California, Berkeley, *Graduate Student Instructor, Department of Mechanical Engineering*, Berkeley, CA. January-June 2001. Graduate student instructor for senior-level bioengineering course titled *Structural Aspects of Biomaterials*, focusing on safety testing, mechanical behavior, and characterization of materials used in medical devices. Preparation and presentation of three 90-minute lectures, leadership of group discussion sections, and one-on-one tutoring assistance.

Swarthmore College, *Writing Associate, Department of English Literature*, Swarthmore, PA, 1994-96. Responsible for instructing classes of freshman engineering students in the style and content of engineering reports through review, written critiques and one-on-one conferences to discuss first drafts of reports and techniques for improving their written communication skills.

IV. HONORS AND AWARDS

- U.S. Senate Special Committee on Aging, Recognition of Excellence in Aging Research (2009)
- FDA/CDRH Special Recognition Award for innovative research (2006)
- FDA Employee Recognition Award Recipient (Feb 2004, March 2005, July 2005, June 2006)
- The Whitaker Foundation Graduate Fellowship in Biomedical Engineering (1997-2002) – full tuition plus living stipend of $17,000-$18,966 per year for graduate studies in biomedical engineering
- Swarthmore College McCabe Achievement Scholarship (full tuition for college) (1992-96)
- Society for Biomaterials Student Travel and Development Award – Honorable Mention (2001)
- Western Orthopaedic Association Alonso J Neufeld Award for best paper (1998)
- National Science Foundation Graduate Research Fellowship (1996) – full tuition plus living stipend of $14,400 per year for graduate studies in engineering (declined)
- Georgia Institute of Technology President's Fellowship (1996) – full tuition plus living stipend of $18,500 per year for graduate studies in biomechanical engineering at Georgia Tech (declined)
- University of Pennsylvania Presidential Fellowship (1996) – full tuition plus living stipend of $16,500 per year for graduate studies in materials science at the University of Pennsylvania (declined)
- Phi Beta Kappa – national academic honor society (inducted 1996)
- Tau Beta Pi – national engineering honor society (inducted 1995)
- Sigma Xi – national scientific research honor society (inducted 1995)
- Rotary Club of Media Scholarship (1992-96) – $1000 per year
- Pennsylvania State Parks Memorial Fund Scholarship (1993-95) – $500 per year

V. RESEARCH SUPPORT

Ongoing Research Support

The Commonwealth Fund **2011-13** **$170,033**
Grant #20110214
What Makes Medical Homes Work: Lessons for Implementation and Spread
This is a mixed methods study to investigate variation in patient-level outcomes over time and among clinics participating in a Patient-Centered Medical Home, and to examine differences in implementation and model components among sites that explain this variation.
Role: Principal Investigator

Orthopaedic Trauma Association **2010-2012** **$97,785**
2009 Clinical Research Award Competition
Decreasing Long Term Complications and Cost Following Hip Fracture using a Medical Home Concept (MHC)
This is a prospective, non-randomized controlled study to compare rates of hospital readmissions,

healthcare costs, and serious adverse events between hip fracture patients whose post-discharge chronic care is managed using a patient-centered medical home model versus standard care.
Role: Principal Investigator

Biogen Idec, Inc. **2011-12** **$170,000**
Multiple Sclerosis (MS) Outcomes in Geisinger Clinic
This is a retrospective and prospective study to investigate the relationship between medication adherence and outcomes in multiple sclerosis (MS) patients.
Role: Co-Investigator

Bon Secours Health System/Hospital Sisters Health System **2010-12** **$131,793**
Clinical Excellence Collaborative Project
This is a project to guide two external health systems in the implementation of various process improvement strategies and analyze the outcomes of these implementation efforts.
Role: Co-Investigator

Completed Research Support

Teva Neuroscience **2010-11** **$207,675**
Multiple Sclerosis (MS) Outcomes in Geisinger Clinic
This was a retrospective study to describe the Geisinger population of patients with multiple sclerosis (MS) in terms of demographics, diagnoses, healthcare utilization and outcomes.
Role: Principal Investigator

Daiichi-Sankyo, Inc. **2010-11** **$225,000**
Medication Adherence and Outcomes in Hypertension
This was a retrospective study to develop and assess three performance metrics for medication adherence using electronic health record (EHR) and insurance claims data, and to test the usability of these metrics and their relationship to hypertension (blood pressure) outcomes.
Role: Co-Investigator

NYU-Langone Medical Center and Geisinger Health System, **2010-11** **$44,195**
2010 Seed Grant Program
Expanding Comparative Effectiveness Research in Orthopedics by Capturing Uniform Measures of Patient-Reported Functional Outcomes at Two Institutions
This was a prospective study to design and implement an electronic infrastructure for collecting functional outcome data from patients with osteoarthritis of the knee using a uniform set of questionnaires and touchscreen computers at Geisinger and NYU.
Role: Site Principal Investigator

Agency for Healthcare Research and Quality **2009** **$24,403**
HHSA #29020050041I, Task Order No. 2
Comparative Effectiveness of Common 1st and 2nd Line Antihypertensive Therapies In Moderating Hypertension-related Changes in Renal Function
This was an observational study using electronic health record (EHR) data to analyze creatinine and glomerular filtration rate (GFR) outcomes from different antihypertensive medications used as first-line single-drug therapy.
Role: Co-Investigator

Agency for Healthcare Research and Quality **2006-2008** **$399,874**
AHRQ DeCide Task Order
HHSA # 290200500411, Task Order No. 1
Optimal Second-Line Therapy for Hypertension
This was an observational study using electronic health record (EHR) data to analyze blood pressure and adverse event outcomes from antihypertensive medications used as first-line and second-line therapies.
Role: Co-Investigator

Geisinger Health Plan **2006-2007** **$10,164**
Impact of a Medical Home Intervention on Health Care Spending, Utilization, and Quality
This was a pre-post observational study with a concurrent control cohort using administrative claims data to compare rates of hospital admissions, readmissions, and healthcare cost data between patients whose chronic care was managed using a patient-centered medical home model versus standard care.
Role: Principal Investigator

Pfizer, Inc. **2006-2007** **$75,000**
Via a Subcontract with University of Pennsylvania
Medication Compliance for Hypertension and Hyperlipidemia
This was an observational study using electronic health record (EHR) data to analyze blood pressure and adverse event outcomes from antihypertensive medications used as first-line and second-line therapies.
Role: Co-Investigator

FDA Office of Women's Health **2004-2006** **$57,000**
Development of Guidelines for Evaluating the Appropriateness of Vertebroplasty Surgery for Patients with Osteoporosis
This was an ex vivo study to investigate effectiveness of percutaneous vertebroplasty in restoring mechanical integrity of the spinal column following an osteoporotic compression fracture.
Role: Principal Investigator

VI. PROFESSIONAL SERVICE

- **Reviewer:** Geisinger Institutional Review Board (IRB) (2010-present), NIH Challenge Grants (2009), NIH Small Business Innovation Research-Orthopedics (2006), *Journal of Biomechanics*, *Journal of ASTM International, Journal of Testing and Evaluation, Medical Engineering & Physics*
- **Member:** American Society for Testing of Materials (ASTM) International, American Society of Mechanical Engineers (ASME), Tau Beta Pi, Sigma Xi, State of Delaware Association of Professional Engineers.
- **Leadership:** Chair, ASTM subcommittee F04.25 on Spinal Devices (2005-present); ASME chapter president (1995-96); Tau Beta Pi chapter president (1995-96); Berkeley Bioengineering Association of Students president (2000-2001)

VII. OTHER RELEVANT SKILLS

- Statistical programming: SAS 9.3, R, JMP
- Database programming experience: Microsoft Access, FileMaker Pro
- Other software experience: Microsoft Excel, Powerpoint, Word, Publisher, Refworks, HTML

VII. PEER REVIEWED PUBLICATIONS

a. Archival Journal Papers – In Press or Published

1. **Graham-J**, Bowen-T, Hou-Z, Irgit-K, Smith-WR, "Bisphosphonate use among patients with and without low-energy non-articular femur fractures," *Acta Orthop Traumatol Turc* (accepted, in press)
2. Yost-G, Puher-S, **Graham-J**, Skelding-K, Scott-T, Berger-P, Blankenship-J, "Readmission in the 30 days after percutaneous coronary invervention," *JACC: Cardiovascular Interventions* 2012 (accepted, in press).
3. Beck-JD, Riehl-JT, Moore-BE, Deegan-JH, Sartorius-J, **Graham-J**, Mirenda-WM, "Risk factors for failed closed reduction of pediatric supracondylar humerus fractures," *Orthopedics* 2012, 35(10):e1492-1496.
4. Maeng-D, **Graham-J,** Bloom-F, Davis-D, Steinberg-E, Tomcavage-J, "Reducing long-term cost by transforming primary care: evidence from Geisinger's Medical Home model," *Am J Managed Care* 2012; 18(3):149-155.
5. Klena-J, **Graham-J,** Lutton-JS, Temple-JL, Beck-JD, "Use of an integrated, systems-based orthopaedic resident education curriculum: a five-year retrospective review of its impact on OITE scores," *Journal of Graduate Medical Education* June 2012; 4(2):250-53.
6. **Graham-J**, Tomcavage-J, Salek-DM, Sciandra-J, Davis-DE, Stewart-WF, "Post-discharge monitoring using interactive voice response system reduces 30-day readmission rates in a case-managed Medicare population," *Medical Care* 2012; 50(1):50-57.
7. Gilfillan-RJ, Tomcavage-J, Rosenthal-MB, Davis-DE, **Graham-J**, Roy-J, Pierdon-SB, Bloom-FJ, Graf-TR, Goldman-R, Weikel-K, Hamory-B, Paulus-RA, Steele-G, "Value and the medical home: effects of transformed primary care," *Am J Managed Care* 2010; 16(8):607-614.
8. **Graham-J**, Estes-B, "What standards can and can't tell us about a spinal device," *The Spine Arthroplasty Society Journal* (Dec 2009); 3(4):178-83.
9. **Graham-J**, Hai-N, Buch-BD, Ahn-C, "Effect of bone density on mechanical properties after percutaneous vertebroplasty," *Spine*, 2007, 32(18):E505-E511
10. Bradford-L, Baker-DA, **Graham- J**, Chawan-A, Ries-MD, and Pruitt-LA, "Wear and surface cracking in early retrieved highly cross-linked polyethylene acetabular liners," *Journal of Bone and Joint Surgery*, 86(6):1271-82, 2004.
11. **Graham-J**, Ries-M, Pruitt-L, "Effect of bone porosity on mechanical integrity of the bone-cement interface," *Journal of Bone and Joint Surgery,* 85A (10):1901-1908, 2003.
12. Gunther-SB, **Graham-J**, Norris-TR, Ries-M, Pruitt-L, "Retrieved glenoid components: a classification system for surface damage analysis," *Journal of Arthroplasty,* 17(1):95-100, 2002.
13. **Graham-J**, Pruitt-L, Ries-M, Gundiah-N, "Fracture and fatigue properties of acrylic bone cement: effects of mixing method, sterilization treatment, and molecular weight," *Journal of Arthroplasty*, 15(8):1028-1035, 2000.
14. Klapperich-C, **Graham-J**, Pruitt-L, Ries-M, "Failure of a metal-metal total hip arthroplasty from progressive osteolysis," *Journal of Arthroplasty*, 14(7):877-881, 1999.
15. Naidu-SH, **Graham-J**, Laird-C, "Pre- and post-implantation dynamic mechanical properties of Silastic HP-100 finger joints," *Journal of Hand Surgery, American Volume*, 1997 Mar, 22(2):299-301.

Journal Papers and Conference Presentations – in review

16. Deegan-BF, Richard-RD, Bowen-TR, Perkins-R, **Graham-JH**, Foltzer-MA, "Chronic kidney disease does not affect outcomes after total joint arthroplasty," *2013 American Public Health Association Meeting* (in review)
17. Jubelt-L, **Graham-J,** Maeng-D, Metlay-J, "Case management performance in a medical home and associations with patient satisfaction and healthcare utilization," *2013 Society for General Internal Medicine Annual Meeting* (in review)
18. Eckroth-Bernard-KR, Garvin-RP, Ryer-EJ, Elmore-JR, **Graham-J,** Franklin-DP, "The SAAAVE Act and routine ambulatory medical care fail to diagnose patients with abdominal aortic aneurysms prior to rupture," *J Vasc Surg* (in review)

b. Conference Papers - Podium Presentations

19. **Graham-J**, Bowen-TR, Strohecker-KA, Irgit-K, Smith-WR, "Reduced mortality in hip fracture patients: combining a perioperative approach and medical home care," *Annual Meeting of the American Academy of Orthopedic Surgeons (AAOS)*, Chicago, IL, March 19-23, 2013.
20. Reid-R, Solberg-L, **Graham-J,** Austin-B, "Case studies in evaluating the patient-centered medical home in the HMO Research Network," *Annual Conference of the HMO Research Network*, Boston, MA, March 23-25, 2011.
21. Pitcavage-J, Leader-J, **Graham-J**, Kirchner-H, Jones-JB, "Overestimation of population level medication adherence: bias in the MPR calculation of hypertensive patients," *Annual Conference of the HMO Research Network*, Boston, MA, March 23-25, 2011.
22. Bloom-F, Langer-RD, **Graham-J**, Townsend-RR, Hennessey-S, "Trends in antihypertensive medication use among incident cases of hypertension, 2002-2006: the Geisinger Clinic population," *25th Annual Meeting of the American Society of Hypertension*, New York, NY, May 1-4, 2010.
23. Langer-RD, **Graham-J**, Hennessey-S, Townsend-RR, "Goal BP is achieved more often with classic compared to newer two-drug antihypertensive regimens," *AHA 50th Cardiovascular Disease Epidemiology and Prevention Conference*, March 2-5, 2010.
24. Langer-RD, **Graham-J**, Hennessey-S, Townsend-RR, Bloom-F, Weber-V, "Outcomes associated with thiazide combinations for 2nd-line treatment of hypertension in older patients," *Annual Conference of the HMO Research Network*, Danville, PA, April 26-29, 2009.
25. Langer-RD, **Graham-J**, Weiner-MG, Eachus-SE, Reardon-J, Blosky-MA, Turner-BJ, "Effects of race and comorbidities on differences in blood pressure control in urban and rural populations," *Annual Conference of the HMO Research Network*, Danville, PA, April 26-29, 2009.
26. Tomcavage-J, **Graham-J**, Roy-J, Gilfillan-R, Goldman-R, Weikel-K, Wolstein-A, "Measuring the effect of a patient-centered health initiative on clinic-level outcomes," *Annual Conference of the HMO Research Network*, Danville, PA, April 26-29, 2009.
27. **Graham-J**, Rukstalis-D, Roy-J, Simmons-S, Bengier-A, "Converting between short and long form versions of a self-reported erectile dysfunction symptom score," *Annual Meeting of the American Urological Association*, Orlando, FL, May 17-22, 2008.
28. Ahn-C, **Graham-J**, "Experimental design for assessing the effect of bone density on mechanical properties after vertebroplasty," *Joint Statistical Meetings*, Salt Lake City, UT, 2007.
29. **Graham-J**, Ries-M, Pruitt-L, "Fracture toughness of the trabecular bone/cement interface sensitive to initial crack length," *Transactions of the 48th Annual Meeting, Orthopaedic Research Society*, 2002.
30. Liu-Q, **Graham-J**, Hall-RS, Robinovitch-SN, "Strength and flexibility influences on age-related changes in functional reach," *Proceedings of the 17th World Congress, International Association of Gerontology*, 2001.
31. Gundiah-N, **Graham-J**, Ries-M, Pruitt-L, "Fatigue life of acrylic bone cement: the relative effects of mixing, sterilization method, and molecular weight," *Transactions of the Sixth World Biomaterials Congress*, 2000.
32. **Graham-J**, Ries-M, Pruitt-L, "Cement penetration depth significantly affects fracture toughness at the trabecular bone/cement interface," *Transactions of the 27th Annual Meeting, Society For Biomaterials*, 2001.

c. Conference Papers – Poster Presentations

33. **Graham-J,** Jones-J, Bieniek-A, Dilley-A, et al., "Medication use and comorbid diseases in a Multiple Sclerosis (MS) population: electronic health record-based data," *28th Int'l Conference on Pharmacoepidemiology and Therapeutic Risk Management,* Madrid, Spain, June 2012.
34. **Graham-J,** Bowen-T, Smith-W, Irgit-K, "Management of hip fracture patients using a standardized perioperative approach combined with a medical home primary care model: a new standard for better outcomes?" *28th Annual Meeting of the Orthopaedic Trauma Association*, Minneapolis, MN, October 3-6, 2012.

35. **Graham-J**, Rukstalis-D, "Longitudinal bladder health outcomes in men managed with extirpative surgery for prostatic disease," *Annual Meeting of the American Urological Association*, Atlanta, GA, May 19-23, 2012.
36. Hou-Z, **Graham-J,** Feldmann-D, Strohecker-K, Smith-WR, Feltham-G, "Single vs. two-tunnel technique during open treatment of acromioclavicular joint disruption," *Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS)*, San Francisco, CA, February 7-11, 2012.
37. **Graham-J**, Langer-RD, Weiner-MG, Eachus-SE, Reardon-J, Blosky-MA, Turner-BJ, "Differences in prescription adherence vs. blood pressure control: linking electronic health record and claims data," *Annual Conference of the HMO Research Network*, Danville, PA, April 26-29, 2009.
38. Langer-RD, **Graham-J**, Hennessey-S, Townsend-RR, Bloom-F, Weber-V, "Increased incident renal disease with ACE-I + thiazide therapy for hypertension: the Geisinger Clinic population," *Annual Conference of the HMO Research Network*, Danville, PA, April 26-29, 2009.
39. **Graham-J,** Langer-RD, Weiner-MG, Reardon-JE, Eachus-S, Cook-J, Blosky-MA, Turner-BJ, "Prescription adherence differs by gender, age and comorbidity and affects blood pressure control outcomes: linking electronic health record and claims data," *9th Scientific Forum on Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke*. Baltimore, MD, April 30-May 2, 2008.
40. Langer-RD, **Graham-J**, Weiner-MG, Eachus-S, Reardon-JE, Blosky-MA, Turner-BJ, "Differences in blood pressure control in urban and rural populations, effects of race and comorbidities: the Geisinger Clinic and University of Pennsylvania populations," *48th American Heart Association Cardiovascular Disease Epidemiology and Prevention Annual Conference*, Colorado Springs, CO, March 13-15, 2008.
41. **Graham-J**, Hai-N and Buch-BD, "Bone density affects relationship between cement dose and mechanical strength after vertebroplasty," *2006 FDA Science Forum*, Washington, DC, April 18-20, 2006.
42. **Graham-J**, Hai-N and Buch-B, "Bone density affects relationship between cement dose and mechanical strength after vertebroplasty," *52nd Annual Meeting of the Orthopaedic Research Society*, Chicago, IL, March 19-22, 2006.
43. Mudano-AS, Bian-J, Sampsel-S, Elkins-M, Briggs-D, Neal-A, Cope-J, Gross-T, McGunagle-D, **Graham-J**, Ferriter-A, Saag-K, "Characteristics of vertebroplasty patients: an analysis of claims data from a large not-for-profit healthcare insurer," *27th Meeting of the American Society for Bone Mineral Research,* Nashville, TN, September 23-27, 2005.
44. Mudano-AS, Bian-J, Sampsel-S, Elkins-M, Briggs-D, Neal-A, Cope-J, Gross-T, McGunagle-D, **Graham-J**, Ferriter-A, Saag-K, "Characteristics of vertebroplasty patients: an analysis of claims data from a large not-for-profit healthcare insurer," *21st International Conference on Pharmacoepidemiology and Therapeutic Risk Management,* Nashville, TN, August 21-24, 2005.
45. Dermody-NC, **Graham-J,** Woods-TO, "Mechanical Characterization of Calcaneus Bone," 2004 *FDA Science Forum*, Washington DC, May 18-19, 2004
46. Collons-L, **Graham-J**, Chawan-A, Ries-M, Pruitt-L, "Mechanisms of fatigue in highly crosslinked UHMWPE," *Proceedings of the 49th Annual Meeting, Orthopaedic Research Society*, New Orleans, LA, 2003.
47. **Graham-J**, Ries-M, Pruitt-L, "Initial crack length and volume fraction effects on fracture toughness at bone/cement interface," *Transactions of the 28th Annual Meeting, Society For Biomaterials*, Tampa, FL, 2002.
48. Bradford-Collons-L., Ries-M, Chawan-A, **Graham-J**, Pruitt-L, "Crosslinked polyethylene shows evidence of wear and fatigue: a retrieval study of Durasul liners," *Transactions of the 28th Annual Meeting, Society For Biomaterials*, Tampa, FL, 2002.
49. **Graham-J**, Ries-M, Pruitt-L, "Trabecular orientation, bone porosity and cement pressure significantly affect fracture toughness at the bone-cement interface," *Proceedings of the 47th Annual Meeting, Orthopaedic Research Society*, San Francisco, CA, 2001.

50. Gunther-S, **Graham-J**, Norris-T, Ries-M, Pruitt-L, “A quantitative evaluation of surface damage in retrieved total shoulder prostheses,” *Transactions of the 47th Annual Meeting*, *Orthopaedic Research Society*, San Francisco, CA, 2001.
51. Hughes-K, Pelletier-B, Stutz-A, **Graham-J**, Lawrence-A, Ries-M, Pruitt-L, “Artificial aging of acrylic bone cements,” *Transactions of the Sixth World Biomaterials Congress*, Kona, HI, 2000.
52. **Graham-J**, Gundiah-N, Ries-M, Pruitt-L, “Effect of sterilization and mixing method on fracture properties of acrylic bone cement,” *Proceedings of the 46th Annual Meeting, Orthopaedic Research Society*, Orlando, FL, 2000.
53. Ries-M, **Graham-J**, Pelletier-B, Goldman-M, Pruitt-L, “Effect of sterilization method on polymethyl-methacrylate bone cement,” Winner of the Alonso J Neufeld Award, Western Orthopaedic Association, 1998.
54. Pelletier-B, **Graham-J**, Goldman-M, Muller-S, Ries-M, Pruitt-L, “The effect of sterilization and aging on the molecular properties of acrylic bone cement,” *Transactions of the 24th Annual Meeting, Society For Biomaterials*, San Diego, CA, 1998.
55. Naidu-SH, Pelligrini-VD, **Graham-J**, Norin-S, Laird-C, “Pre and post implantation dynamic mechanical properties of Silastic HP-100 finger joints,” *Proceedings of the 42nd Annual Meeting, Orthopaedic Research Society*, New Orleans, LA, 1996.

VIII. INVITED ARTICLES and BOOK CHAPTERS

56. **Graham-J**, Graf-T, Stewart-W, "The medical home experience: the patient's role in shared decision making, and team communication " in *Core Value, Community Connections: Care Coordination in the Medical Home*. Vienna, VA: Health2Resources (2011).
57. **Graham-J**, Peck-J, “FDA Regulation of PEEK Implants,” *The PEEK Biomaterials Handbook*, S. Kurtz, ed. San Diego: Elsevier Academic Press (2011).
58. **Graham-J,** “Public Sector Research, Development and Regulation,” *Careers in Biomedical Engineering*, G. Madhavan, ed. New York: Springer (2008).
59. **Graham-J,** “Standard Test Methods for Spine Implants,” *Spine Technology Handbook*, S.M. Kurtz and A.A. Edidin, eds. San Diego: Elsevier Academic Press (2006).

IX. INVITED LECTURES

1. “Observational clinical studies using large electronic datasets,” invited speaker to ELEC 402: Genomic Signal Processing, Department of Electrical Engineering, Bucknell University, September 21, 2012.
2. “Using large electronic datasets for observational clinical studies in an integrated health system,” invited speaker for Bucknell Institute for Public Policy series, July 17, 2012.
3. “Living in a variable world: why we (unfortunately) need statistics,” invited speaker at journal club, Orthopedic Spinal Devices Branch, FDA, Silver Spring, MD. January 10, 2012.
4. “Propensity score methods for estimating treatment effects in observational studies,” Geisinger Center for Health Research seminar series, August-November 2011.
5. "Recent Trends in FDA Adverse Reporting for Spinal Implants," *2011 Pittsburgh Spine Summit,* Allegheny General Hospital, Pittsburgh, PA, September 9, 2011.
6. "Diffusing Care Coordination Models: Translating Research Into Policy & Practice," invited discussion facilitator for The Gerontological Society of America's Scientific Summit, Washington DC, September 16, 2010.
7. "The Impact of Medical Home on Patient Outcomes and Costs," invited speaker for webinar on *Medical Homes: How Coordinated Health Care Delivery Can Help Maximize Revenue Growth*, sponsored by Zurich NA, February 24, 2010.
8. “Medical Device Regulation and the FDA,” guest lecture to Biomedical Engineering 408 class, Bucknell University, February 8, 2010.
9. “FDA Premarket Review of Medical Devices,” guest lecture to Biomedical Engineering 408 class, Bucknell University, February 9, 2007.
10. “Biomedical Engineering at the FDA,” Biomedical Engineering guest lecture, Bucknell University, November 10, 2006.

11. "Osteoporosis and Vertebroplasty," Hungry Minds seminar, Geisinger Center for Health Research, October, 19, 2006.
12. "Biomedical Engineering Careers in the Federal Government," 28th Annual International Conference of IEEE/EMBS, New York, August 31, 2006.
13. "Osteoporosis and Vertebroplasty," FDA Division of General, Neurological and Restorative Devices Clinical Grand Rounds Seminar, May 24, 2006.
14. "Evaluating the Effectiveness of Vertebroplasty for Improving the Mechanical Properties of the Spine in Patients with Osteoporosis," Committee for the Advancement of FDA Science seminar, March 10, 2006.
15. "Bioengineering in the Public Health Arena: Life as a P-H-D at the F-D-A," UCSF/UCB Bioengineering Graduate Group Annual Retreat, Tahoe City, CA, October 23, 2004.
16. "Testing and Evaluation of Wear Debris," FDA Orthopaedic and Rehabilitative Devices Panel, June 2-3, 2004, open public forum concerning new device application for the first artificial lumbar disc replacement
17. "Benches, Bedsides, and Better Medical Devices: The Goals and Roles of the FDA," lecture to senior undergraduate course *Bioengineering 117: Structural Aspects of Biomaterials* at University of California, Berkeley, CA, March 4, 2004.
18. "Medical Device Engineering at the FDA: Science, Law Enforcement, and YOU," College of Engineering, University of California, Berkeley, CA, March 11, 2004.
19. "Fracture Resistance of Cemented Total Joint Replacements: Effects of Sterilization, Mixing, Bone Density and Pressure," invited talk to the FDA Division of Mechanics and Materials Science, April 19, 2003.
20. "Fracture Resistance at the Bone-Implant Interface in Total Joint Replacement," invited talk presented to Exponent Inc. (engineering consulting firm), Philadelphia, PA, April 3, 2002.
21. "A History of Synthetic Heart Valve Designs," invited lecture presented to graduate biomaterials course, Department of Bioengineering, University of California, Berkeley, CA, March 17, 1999.

X. PROFESSIONAL DEVELOPMENT

a. Recent Training Courses in Biostatistics

- *Multilevel Modeling* with Sandra Eckel, University of Southern California (2011)
- *Biostatistical Analysis of Epidemiologic Data: Semiparametric Methods* with Steve Selvin, University of California-Berkeley (2011)
- *Propensity Score Methods for Estimating Treatment Effects in Observational Studies* with Peter C. Austin, University of Toronto (2010)
- *Intent-to-Treat Analysis and Missing Data Issues* with Chul Ahn, Food and Drug Administration (2006)
- *Basic Concepts of Statistical Inference for Causal Effects in Experiments and Observational Studies* with Donald B. Rubin, Harvard University (2003)

b. Recent Conferences Attended

- AcademyHealth Annual Meeting (2011)
- ASTM F04 Medical Materials and Devices Committee Biannual Meetings (2004-2012)
- AHRQ Comparative Effectiveness Research Methods Symposium (2009)
- HMO Research Network Conference (2009)
- American Heart Association Quality of Care and Outcomes Research in Cardiovascular Disease and Stroke Conference (2008)
- American Urology Association Annual Meeting (2008)
- IEEE/EMBS Annual International Conference (2006)
- Orthopaedic Research Society Annual Meeting (2004-2006)
- American Academy of Orthopaedic Surgeons Annual Meeting (2004-2006)
- Federation of Spine Associations Annual Specialty Day Meeting (2004-2006)
- NIH Consensus Development Conference on Total Knee Replacement (December 2003)
- FDA Science Forum, Washington, DC (2004-2006)
- Biomedical Engineering Materials and Applications Roundtable Workshop (2006)

c. Recent Training Courses in Other Topics

- *Overview of AHRQ's Medical Effectiveness Research Initiatives* (2006)
- *Nitinol in Medical Devices* (2005)
- *Finite Element Analysis in Cardiovascular Devices* (2004)
- *Fine-tuning the Medical Device Product Review Process* (2004)
- *Joint Arthroplasty 2004: Issues that Confront Us* (2004)
- *Australian Regulation of Medical Devices, Cellular and Tissue Therapies* (2003)
- *Introduction to Food and Drug Law* (2003)