



Exponent[®]
Engineering & Scientific Consulting

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Professional Profile

Dr. Kurtz is a Principal in Exponent's Biomedical Engineering and Science practice. He serves as a part-time Research Professor and Director of the Implant Research Center at Drexel University's School of Biomedical Engineering, Science, and Health Systems. Dr. Kurtz has expertise in the additive manufacturing (3D printing) of medical devices, with an emphasis on orthopaedic, spine, and trauma implants. His professional career has involved the evaluation of medical device technologies, from a combined analytical, experimental, and clinical perspective.

His recent research interests include point-of-care additive manufacturing of medical devices, especially with high-temperature PAEK polymers. His research activities have emphasized the real-world clinical performance of medical devices, including orthopedic, spine, and cardiovascular implants, as assessed by human implant retrieval specimens, national implant registries, and national health care databases; clinical studies of medical devices; and the mechanical behavior of synthetic biomaterials, including UHMWPE and PEEK.

Dr. Kurtz is active in many professional societies, including the American Academy of Orthopedic Surgeons, the American Association of Hip and Knee Surgeons, the Hip Society, the Knee Society, and the American Society for Testing and Materials (ASTM). Dr. Kurtz has edited 10 books and written over 260 journal articles and 500 conference abstracts. His work has been recognized with numerous awards, and he has been inducted as a Fellow in the American Institute for Medical and Biological Engineering.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, Cornell University, 1995

M.S., Mechanical Engineering, Cornell University, 1992

B.S., Mechanical Engineering, Cornell University, *with distinction*, 1990

Fellow, American Institute for Medical and Biological Engineering (AIMBE), for outstanding contributions to the field of biomedical engineering in explant analysis and the clinical performance of orthopaedic implants, March 2019

Patrick G. Laing Award (formerly called the F04 Award of Merit), for Outstanding Contributions in the Field of Medical & Surgical Materials & Devices, American Society for Testing and Materials, May 2015

James A. Rand Award, American Association of Hip and Knee Surgeons, for Most Outstanding Paper in Arthroplasty Surgery, 2012

John W. Hyatt Award (Benefit to Society), for Outstanding Achievement in Plastics that Benefit Mankind, Awarded by the Society of Plastics Engineers, 2008

Lawrence D. Dorr Award, American Association of Hip and Knee Surgeons, for Most Outstanding Paper in Surgical Techniques and Technologies, 2008, 2009

Leroy Wyman Award, for Outstanding Contributions to Committee F-04 on Medical & Surgical Materials & Devices, American Society for Testing and Materials, May 2008

Otto Aufranc Hip Society Award, for the Best Paper Encompassing Important Advances in the Management of Hip Disorders, 2006

The Spine Education in Research Award, for the Best Basic Science Paper, Awarded by the Spine Arthroplasty Society, 2006

Fulbright Senior Specialist, Fulbright Scholar Program, Council for International Exchange of Scholars, 2006

MOSES Award, Committee F-04 on Medical & Surgical Materials & Devices, American Society for Testing and Materials, May 2000

Academic Appointments

Research Professor, School of Biomedical Engineering, Science, and Health Systems, Drexel University

Professional Affiliations

The Hip Society

The Knee Society

American Academy of Orthopaedic Surgeons

American Association for Hip and Knee Surgeons (Exhibits Committee, 2009-2013; Orthopaedic Device Forum, 2014-2018)

Orthopaedic Research Society

American Society for Testing and Materials (Vice-Chairman of Subcommittee F04.11 on Polymeric Materials; task force chair for UHMWPE and PEEK specification and characterization; task force chair for metal-on-metal hip clinical characterization, 2011-2012)

Patents

Patent 10,485,902: Antibiotic Drug Release Sheath, Issued November 26, 2019 (with C.K. Kepler, A.M. Sevit, N.J. Hicock, F Forsberg, and J. R. Eisenbrey).

Patent 6,267,011: Method and Apparatus for Determining the True Stress and True Strain Behavior of a Ductile Polymer," Issued July 31, 2001 (with C.W. Jewett and J.R. Foulds).

Publications

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Ong KL, Niazi F, Lau E, et al. Knee OA cost comparison for hyaluronic acid and knee arthroplasty. *J Orthop Surg Res*. 2020;15(1):305.

Perkins MR, Arnholt CM, MacDonald DW, Kurtz SM, Mihalko WM. Retrieval Analysis of Cruciate-Retaining and Posterior-Stabilized Total Knee Arthroplasty and Correlations to Laxity and Wear. *J Arthroplasty*. 2020;35(8):2249-2253..

Rupp M, Lau E, Kurtz SM, Alt V. Projections of Primary TKA and THA in Germany From 2016 Through 2040. *Clin Orthop Relat Res*. 2020;478(7):1622-1633.

Arnholt CM, White JB, Lowell JA, Perkins MR, Mihalko WM, Kurtz SM. Postmortem Retrieval Analysis of Metallosis and Periprosthetic Tissue Metal Concentrations in Total Knee Arthroplasty. *J Arthroplasty* 2020;35:569-578.

Delaney LJ, Basgul C, MacDonald DW, Fitzgerald K, Hickok NJ, Kurtz SM, Forsberg F. Acoustic Parameters for Optimal Ultrasound-Triggered Release from Novel Spinal Hardware Devices. *Ultrasound Med Biol* 2020;46:350-358.

Torosyan Y, Spece H, Goodacre N, Azarbaijani Y, Marinac-Dabic D, Kurtz SM. In silico approaches for enhancing retrieval analysis as a source for discovery of implant reactivity-related mechanisms and biomarkers. *J Biomed Mater Res B Appl Biomater* 2020;108:263-271.

Schachtner J, Frohbergh M, Hickok N, Kurtz S. Are Medical Grade Bioabsorbable Polymers a Viable Material for Fused Filament Fabrication? *J Med Device* 2019;13:0310081-0310085.

Basgul C, Yu T, MacDonald DW, Siskey R, Marcolongo M, Kurtz SM. Does annealing improve the interlayer adhesion and structural integrity of FFF 3D printed PEEK lumbar spinal cages? *J Mech Behav Biomed Mater*. 2020;102:103455.

Delaney LJ, MacDonald D, Leung J, Fitzgerald K, Sevit AM, Eisenbrey JR, Patel N, Forsberg F, Kepler CK, Fang T, Kurtz SM, Hickok NJ. Ultrasound-triggered antibiotic release from PEEK clips to prevent spinal fusion infection: Initial evaluations. *Acta biomaterialia* 2019;93:12-24.

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Hansen EN, Ong KL, Lau E, Kurtz SM, Lonner JH. Unicondylar Knee Arthroplasty Has Fewer Complications but Higher Revision Rates Than Total Knee Arthroplasty in a Study of Large United States Databases. *J Arthroplasty* 2019;34:1617-1625.

Sodhi N, Anis HK, Garbarino LJ, Gold PA, Kurtz SM, Higuera CA, Hepinstall MS, Mont MA. Have We

Actually Reduced Our 30-Day Short-Term Surgical Site Infection Rates in Primary Total Hip Arthroplasty in the United States? J Arthroplasty 2019;34:2102-2106.

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<https://www.healio.com/orthopedics/hip/news/print/orthopedics-today/%7B23503004-cd0f-4984-9546-47b3245187d4%7D/is-switching-from-cobalt-chrome-to-non-cobalt-chrome-femoral-heads-the-best-way-to-mitigate-taper-corrosion-problems> . September 2018.

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30- and 90-day readmission after TKA? J Arthroplasty. 2016;31:2099-2107.

Kurtz SM, Lau EC, Ong KL, Adler EM, Kolisek FR, Manley MT. Hospital, patient, and clinical Factors influence 30- and 90-day readmission after primary total hip arthroplasty. J Arthroplasty. 2016;31:2130-2138.

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MacDonald DW, Kurtz SM. Retrieval Analysis of Sequentially Annealed HXLPE in THA and TKA: Minimum 5 Year Follow-up. Podium Presentation 3, 9th International UHMWPE Meeting, Philadelphia, PA, October 10-11, 2019.

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Higgs GB, Gerveshi C, Evans A, Tabb L, Kurtz SM. Incorporating Retrieval Analysis into Database Research to Understand the Role of Periprosthetic Joint Infection on Taper Corrosion in Total Hip Replacements. Paper 133, 7th Annual International Congress of Arthroplasty Registries, Reykjavik, Iceland, June 9-11, 2018.

Basgul C, Yu T, Dobson B, MacDonald DW, Siskey R, Marcolongo M, Kurtz SM. Characterization of 3D Printed PEEK Lumbar Interbody Fusion Devices via Fused Filament Fabrication. Annual Meeting of the Society for Biomaterials. Atlanta, GA, April 11-14, 2018.

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Basgul C, Yu T, MacDonald DW, Dobson B, Baxter JN, Siskey R, Marcolongo M, Kurtz SM. Is It Possible to Ensure Enough Strength via 3D Printing for PEEK Lumbar Interbody Fusion Devices? Poster 1262, Transactions of the Orthopaedic Research Society, New Orleans, LA, March 10-13, 2018.

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Arnholt CM, White JB, Higgs GB, MacDonald DW, Lowell JA, Perkins MR, Mihalko WM, Kurtz SM. Associations Between Metallosis and Tissue Metal Concentration in Autopsy Retrieved TKA. Paper 207, Transactions of the Orthopaedic Research Society, New Orleans, LA, March 10-13, 2018.

Higgs GB, MacDonald DW, Lowell J, Padayatil A, Mihalko WM, Siskey RL, Gilbert JL, Rimnac CM, Kurtz SM. Does Corrosion Loosen the Taper Connection of Femoral Components in Total Hip Replacements? Paper 0276, Transactions of the Orthopaedic Research Society, New Orleans, LA, March 10-13, 2018.

Higgs GB, Gerveshi C, Tabb L, Kurtz SM. Combining Retrieval Research with Epidemiology to Understand the Role of Periprosthetic Joint Infection on the Oxidative Degradation of Total Hip Replacements. Poster 1807, Transactions of the Orthopaedic Research Society, New Orleans, LA, March 10-13, 2018.

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Schachtner JT; MacDonald DW; Klein GR; Kraay M; Rimnac RM; Kurtz SM. A Comparison Of Short-term Anti-Oxidant And Remelted HXLPE In THA. Poster #0985, Transactions of the Orthopaedic Research Society, New Orleans, LA, March 10-13, 2018.

Schachtner JT; MacDonald DW; Klein GR; Chen AF; Kraay M; Malkani A; Mont MA; Rimnac CM; Kurtz SM. Long-term In Vivo Degradation of 1st Generation Highly Crosslinked Polyethylene in THA. Poster #0990, Transactions of the Orthopaedic Research Society, New Orleans, LA, March 10-13, 2018.

Ong KL, Niazi F, Lau E, Shaw P, Kurtz SM. Cost patterns following the diagnosis of knee osteoarthritis in the Blue Cross/Blue Shield patient population. Paper, Orthopaedic Summit 2017, Las Vegas, NV, December 6-9, 2017.

Ong KL, Niazi F, Lau E, Shaw P, Kurtz SM. Comparison of the Costs for Hyaluronic Acid and Total Knee Arthroplasty in the Treatment of OA for the Blue Cross/Blue Shield Patient Population. Poster No. 1093, American College of Rheumatology Annual Meeting, San Diego, CA, November 2-5, 2017.

Spece H, MacDonald DW, Mont M, Lee G-C, Kurtz SM. Fretting Corrosion and Polyethylene Damage Mechanisms in Modular Dual Mobility Total Hip Arthroplasty. Paper #27, 27th Annual Meeting of the American Association of Hip and Knee Surgeons. Dallas, TX, November 2-5, 2017.

Perkins MR, Lowell JA, Arnholt CM, MacDonald DW, Kerkhof A, Kurtz SM, Mihalko WM. Are Soft Tissue Laxity and Tissue Metal Concentrations After Total Knee Arthroplasty Related? Poster, 27th Annual Meeting of the American Association of Hip and Knee Surgeons. Dallas, TX, November 2-5, 2017.

Higgs GB, Gerveshi C, Evans A, Tabb L, Kurtz SM. Bridging the Gap Between Implant Retrieval Research and Epidemiological Studies using Survival Analysis. Poster #6, 27th Annual Meeting of the American Association of Hip and Knee Surgeons. Dallas, TX, November 2-5, 2017.

Kurtz SM, Lau E, Ong K, Adler E, Kolisek F, Manley M. Has Healthcare Reform Legislation Reduced the Economic Burden of 90-day Readmissions following Total Knee Arthroplasty? Paper No. 236, Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, California, March 14-18, 2017.

Kurtz SM, Lau E, Ong K, Adler E, Kolisek F, Manley M. Economic Burden of 90-day Readmissions following Total Hip Arthroplasty: What Are the Roles of Patient, Clinical, and Hospital Factors? Paper No. 591, Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, California, March 14-18, 2017.

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Mont M, Elmallah R, Chughtai M, Kurtz S, Bozic K, Adib F. Determining Health-Related Quality-of-life Outcomes Using the SF-6D Following Total Hip Arthroplasty. Poster Presentation, 26th Annual Meeting of the American Association of Hip and Knee Surgeons. Dallas, TX, November 10-13, 2016.

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Kurtz S, Lau E, Baykal D, Springer B. Outcomes of Ceramic Bearings After Primary THA in the Medicare Population. Podium Presentation, ISTA 2016: Annual Congress of the International Society for Technology in Arthroplasty, Boston, Massachusetts, October 5-8, 2016.

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Day J, MacDonald D, Kraay M, Rimnac C, Williams G, Abboud J, Kurtz S. Polyethylene Bearing Surface Wear in Reverse Total Shoulder Arthroplasty, E-Poster Presentation with Short Talk, ISTA 2016: Annual Congress of the International Society for Technology in Arthroplasty, Boston, Massachusetts, October 5-8, 2016.

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Kurtz S, Lau E, Baykal D, Springer B. Outcomes of Ceramic Bearings After Revision THA in the Medicare Population. Abstract ID 42868. 37th SICOT Orthopaedic World Congress, Rome, Italy, September 8-10, 2016.

Niazi F, Ong K, Anderson A, Lau E, Kurtz S, Altman R. Use of low molecular weight hyaluronic acid is associated with a shorter time to knee arthroplasty in the elderly U.S. knee OA Population. Abstract ID 43047. 37th SICOT Orthopaedic World Congress, Rome, Italy, September 8-10, 2016.

Niazi F, Ong K, Anderson A, Lau E, Kurtz S, Altman R. Synergistic effects of hyaluronic acid and corticosteroid injections in extending time to knee arthroplasty in knee osteoarthritis patients. Abstract ID 43046. 37th SICOT Orthopaedic World Congress, Rome, Italy, September 8-10, 2016.

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Kurtz SM, Lau E, Ong K, Adler E, Kolisek F, Manley M. Which Hospital and Clinical Factors Drive 30-Day Readmission in TKA? Paper No. 305, Annual Meeting of the American Academy of Orthopaedic Surgeons, Orlando, Florida, March 1-5, 2016.

Arnholt CM, MacDonald D, Kocagoz S, Chen A, Cates H, Klein GR, Rimnac CM, Kurtz SM. Bearing Surface Corrosion and Damage Mechanisms in Retrieved Total Knee Arthroplasty Femoral Components. Paper No. 468, Annual Meeting of the American Academy of Orthopaedic Surgeons, Orlando, Florida, March 1-5, 2016.

Ong K, Anderson A, Lau E, Niazi F, Kurtz S, Altman R. Synergistic effects of hyaluronic acid and corticosteroid injections to delay knee arthroplasty in knee OA patients. Poster 2228, Transactions of the Orthopaedic Research Society, Orlando, Florida, March 5-8, 2016.

Kurtz SM, Lau E, Baykal D, Springer B. Outcomes of Ceramic Bearings After Revision Total Hip Arthroplasty in the US Medicare Population. Podium Presentation 5A-7. ISTA 2015: Annual Congress of the International Society for Technology in Arthroplasty, Vienna, Austria, September 30-October 3, 2015.

MacDonald D, Mehta K, Klein GR, Hatzband M, Levine HB, Mont M, Kurtz SM. Retrieval Analysis of Short-Term Anti-Oxidant Stabilized HXLPE Used in Hip and Knee Arthroplasty. Podium Presentation 9B-2. ISTA 2015: Annual Congress of the International Society for Technology in Arthroplasty, Vienna, Austria, September 30-October 3, 2015.

Arnhold C, MacDonald D, Kocagoz S, Chen A, Cates H, Klein GR, Rimnac C, Kurtz SM. Bearing Surface Abrasive Wear and Corrosion Damage Mechanisms in Retrieved CoCr Alloy Femoral Components for Contemporary TKA. Podium Presentation 9B-3. ISTA 2015: Annual Congress of the International Society for Technology in Arthroplasty, Vienna, Austria, September 30-October 3, 2015.

MacDonald DW, Schachtner J, Chen A, Cates H, Klein GR, Mont MA, Kraay M, Malkani A, Lee GC, Hamlin B, Rimnac CM, Kurtz SM. Wear and Oxidation of Retrieved, Long-Term, 1st Generation HXLPE Components in THA. EPoster 1-1-3. ISTA 2015: Annual Congress of the International Society for Technology in Arthroplasty, Vienna, Austria, September 30-October 3, 2015.

Kurtz SM, Arnhold CM, Underwood RJ, MacDonald DW, Higgs GB, Underwood R, Chen A, Klein GR, Hamlin B, Lee GC, Mont MA, Cates H, Malkani A, Kraay M, Rimnac CM. Do Stem Taper Microgrooves Influence Taper Corrosion in Total Hip Arthroplasty? A Matched Cohort Study. EPoster 1-4-6. ISTA 2015: Annual Congress of the International Society for Technology in Arthroplasty, Vienna, Austria, September 30-October 3, 2015.

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Hanzlik J, Day J, Kurtz S, Verdonschot N, Janssen D. Does Implant Design, Bone Quality and Activity Type Affect Micromotion at the Bone-Porous Tantalum Tibial Tray Interface? EPoster 4-7-5. ISTA 2015: Annual Congress of the International Society for Technology in Arthroplasty, Vienna, Austria, September 30-October 3, 2015.

Arnhold C, Underwood R, MacDonald DW, Higgs GB, Chen A, Klein GR, Kraay M, Rimnac C, Kurtz SM. Micro-Grooved Surface Topography Does Not Influence Fretting Corrosion Of Tapers In THA: Classification And Analysis. Free Paper. Transactions of the 16th EFORT Congress, Prague, Czech Republic, May 27-29, 2015.

Kurtz SM, Lau E, Ong K, Katz JN, Bozic KJ. Universal Health Coverage and Total Joint Arthroplasty: Implications from the Massachusetts Experience. Paper No. 333, Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, March 24th - 28st, 2015.

Bozic KJ, Ong K, Lau E, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Trends in Short- and Mid-Term Risk of Revision THA following Primary THA in Medicare Patients. Paper No. 687, Annual Meeting of the American Academy of Orthopaedic Surgeons, Las Vegas, NV, March 24th - 28st, 2015.

Lovald S, Ong K, Lau E, Joshi G, Kurtz SM, Malkani AL. Patient Selection for Short-Stay Total Hip Arthroplasty. Poster No. P061, Annual Meeting of the American Academy of Orthopaedic Surgeons, Las

Vegas, NV, March 24th - 28st, 2015.

MacDonald DW, Clarkin-Wright G, Parvizi J, Lee GC, Klein GR, Kraay M, Rimnac CM, Gilbert JL, Kurtz SM. Titanium Alloy Sleeves Do Not Prevent Fretting Corrosion in Modular THA. 61st Annual Meeting of the Orthopaedic Research Society. Las Vegas, NV, March 28th - 31st, 2015.

Hanzlik JA, Day JS, Klein GR, Levine HB, Hartzband MA, Parvizi J, Kraay MJ, Rimnac CM, Kurtz SM. What Implant Factors Affect Bone Ingrowth in Retrieved Porous Tantalum Hip Implants? Poster 977, Transactions of the Orthopaedic Research Society, Las Vegas, Nevada, March 28 - 31, 2015.

Mehta K, MacDonald DW, Klein GR, Hartzband M, Levine H, Mont MA, Kurtz SM. Retrieval Analysis of Short-Term Anti-Oxidation Stabilized Highly Crosslinked UHMWPE Used in Knee and Hip Arthroplasty. 61st Annual Meeting of the Orthopaedic Research Society. Las Vegas, NV, March 28th - 31st, 2015.

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Day JS, MacDonald DW, Abboud JA, Williams GR, Rimnac CM, Kraay MJ, McCloskey R, Kurtz SM. Mechanically Assisted Crevice Corrosion Damage in Total Shoulder Arthroplasty is Comparable to Total Hip Arthroplasty. 61st Annual Meeting of the Orthopaedic Research Society. Las Vegas, NV, March 28th - 31st, 2015.

Arnholt C, Kocagoz S, MacDonald DW, Gilbert JL, Malkani A, Klein GR, Rimnac CM, Kurtz SM. Corrosion and Damage Mechanisms in Retrieved Long-Term TKA Femoral Components. 61st Annual Meeting of the Orthopaedic Research Society. Las Vegas, NV, March 28th - 31st, 2015.

Kocagoz SB, Underwood RJ, MacDonald DW, Gilbert JL, Rimnac CM, Kurtz SM. Metal Release in Ceramic and CoCr Heads at the Modular Junction: a Matched Cohort Retrieval Study. 61st Annual Meeting of the Orthopaedic Research Society. Las Vegas, NV, March 28th - 31st, 2015.

Kocagoz SB, Underwood RJ, MacDonald DW, Baykal D, Day JS, Kurtz SM. Validation Study for a Quantitative Method to Measure the Volumetric Material Loss from Taper Surfaces. 61st Annual Meeting of the Orthopaedic Research Society. Las Vegas, NV, March 28th - 31st, 2015.

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Carreon LY, Ong KL, Lau E, Kurtz SM, Glassman SD. Risk of osteoporotic fracture after steroid injections in Medicare patients. Paper No. 84, North American Spine Society 29th Annual Meeting, San Francisco, CA, November 12-15, 2014.

Ong KL, Lau E, Kurtz SM, Hansen E, Lonner J. Short-term complications and revision following unicompartmental knee arthroplasty. Poster No. 54, 24th Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 6-9, 2014.

MacDonald DW, Kurtz SM, Kocagoz SB, Hanzlik J, Underwood RJ, Gilbert JL, Lee GC, Mont MA, Kraay MJ, Klein GR, Parvizi J, Day JS, Rimnac CM. Does Taper Angle Clearance Influence the Fretting Corrosion Behavior of Modular THA Components? A Matched Cohort Study. 27th Annual Congress of the International Society for Technology in Arthroplasty, Kyoto, Japan, 24-27 Sep, 2014.

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Bozic K, Kamath A, Lau E, Ong K, Kurtz S, Chan V, Vail T, Berry D, Rubash H. The epidemiology of revision total knee arthroplasty in the United States. Paper No. 330, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Bozic K, Lau E, Ong K, Kamath A, Chan V, Vail T, Kurtz S, Rubash H, Berry D. Quantifying the burden of periprosthetic joint infection in revision total hip and total knee arthroplasty Paper No. 432, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Ong KL, Lotke PA, Lau E, Manley MT, Kurtz SM. Prevalence and costs of rehabilitation and physical therapy after primary TJA. Paper No. 395, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Arnholt C, MacDonald DW, Tohfafarosh M, Gilbert JL, Klein GR, Mont MA, Parvizi J, Rimnac CM, Kurtz SM. Mechanically Assisted Taper Corrosion in Modular TKA. Paper No 318, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Day JS, MacDonald DW, Arnholt C, Williams GR, Getz CL, Kraay MJ, Rimnac CM, Kurtz SM. What Biomechanical and Patient Factors Influence Fretting Corrosion in Total Shoulder Replacement? Paper 624, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Bozic K, Kamath A, Lau E, Ong K, Kurtz S, Chan V, Rubash H, Berry D, Vail T. Trends in THA bearing couple usage in the United States. Poster No. 92, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Kocagöz SB, Underwood RJ, MacDonald DW, Day JS, and Kurtz SM. What Is the Clinical Relevance of Visual Inspection of the Head / Stem Taper Junctions in Large Metal-on-Metal Hips? Poster No P067, 81st Annual Meeting of the American Academy of Orthopaedic Surgeons, New Orleans, LA, March 11-15, 2014.

Ong K, Kurtz SM, Lau E, Parvizi J, Mont MA, Manley MT. Migratory patterns of primary total hip and knee patients influence hospital utilization. Poster No. 951, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Arnholt C, MacDonald DW, Tohfafarosh M, Gilbert JL, Rimnac CM, Klein GR, Mont MA, Parvizi J, Cates HE, Lee GC, Malkani A, Kraay MJ, Kurtz SM. Mechanically Assisted Taper Corrosion in Modular TKA. Poster No 849, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Day JS, MacDonald DW, Arnholt C, Williams GR, Getz CL, Kraay MJ, Rimnac CM, Kurtz SM. What Biomechanical and Patient Factors Influence Fretting Corrosion in Total Shoulder Replacement? Poster No 990, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Hanzlik JA, Day JS, Klein GR, Levine HB, Hartzband MA, Parvizi J, Kraay MJ, Rimnac CM, Kurtz SM. Analysis of Bone Ingrowth in Retrieved Porous Tantalum Tibial Trays. Poster No 961, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Kocagöz SB, Underwood RJ, MacDonald DW, Gilbert JL, Day JS, Kurtz SM. Quantitative Taper Angle Measurement Method for Retrieved Femoral Heads and Stems. Poster No 1800, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Kurtz SM, Zielinska O, MacDonald DW, Parvizi J, Mont MA, Klein GR, Kraay MJ, Stulberg B, Lee GC, Malkani A, Rimnac CM. Oxidation and Rim Damage of Sequentially Annealed HXLPE in Total Hip Arthroplasty. Poster No 984, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

MacDonald DW, Baykal D, Underwood RJ, Kurtz SM. Assessment of Tribological Properties of Retrieved 1st Generation Annealed Highly Crosslinked UHMWPE Using Multidirectional Pin-on-Disk Testing. Poster No 939, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Tohfafarosh M, Baykal D, Mansmann K, Kurtz SM. Finite Element Material Modeling and Evaluation of Sterilization Effects on a Hydrogel. Poster No 306, 60th Annual Meeting of the Orthopaedic Research Society, New Orleans, LA, March 15-18, 2014.

Arnholt C, MacDonald DW, Tohfafarosh M, Gilbert JL, Rimnac CM, and Kurtz SM. Mechanically assisted taper corrosion in TKA. Paper No. 34. 23rd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 8-10, 2013.

Ong KL, Lotke PA, Lau E, Manley MT, and Kurtz SM. Prevalence and costs of rehabilitation and physical therapy after primary total joint arthroplasty. Poster No. 148. 23rd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 8-10, 2013.

Bozic KJ, Lau E, Ong K, Chiu V, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Risk factors for early revision following primary total knee arthroplasty in Medicare patients. Poster No. 204, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Bozic KJ, Lau E, Ong K, Chiu V, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Risk factors for early revision following primary total hip arthroplasty in Medicare patients. Poster No. 72, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Lovald ST, Ong K, Lau E, Schmier JK, Bozic KJ, Kurtz SM. Mortality, cost and downstream disease of total hip arthroplasty patients in the Medicare population. Paper No. 779, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Eddin AA, Ong K, Lau E, Kurtz SM. Morbidity and mortality after vertebral augmentation and non-operative management of vertebral fractures. Paper No. 448, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Kurtz SM, Ong K, Lau E, Watson H, Bozic KJ. Impact of the economic downturn on TJR demand in the U.S.: updated projections for TJR utilization through 2020. Poster No. 104, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Ong K, Watson H, Manley MT, Kurtz SM. Comparison of infection, revision and surgical interventions between unicondylar and total knee arthroplasty. Poster No. 169, 80th Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, March 19-23, 2013.

Lovald S, Ong K, Lau E, Schmier J, Bozic K, Kurtz S. A Medicare analysis of mortality, disease and healthcare spending related to hip osteoarthritis. Poster No. 992, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

Kurtz SM, Walkenhorst R, Hufen J, Siskey RL. Baseline properties and wear resistance of Vitamin E containing ultra-high molecular weight polyethylene grades. Poster No. 1235A, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

Kurtz SM, MacDonald D, Kocagoz S, Tohfafarosh M, Parvizi P, Mont M, Malkani A. Oxidative and wear properties of sequentially annealed highly crosslinked polyethylene used in total knee arthroplasty, Poster No. 1715, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

G. B. Higgs, J. Hanzlik, D. MacDonald, G. Klein, J. Parvizi, M. A. Mont, M. Kraay, C. M. Rimnac, S. M. Kurtz. Does Fretting and Corrosion Occur at Modular Interfaces other than the Head-Stem Junction in Metal-on-Metal Total Hip Arthroplasty Devices? Poster No. 1759, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

R. J. Underwood, D. MacDonald, G. Higgs, R. L. Siskey, J. Day, S. M. Kurtz. Tribocorrosion in Taper Junctions: Measurements and Observations from Explanted MoM Hips. Poster No. 1763, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

S. M. Kurtz, D. MacDonald, G. B. Higgs, J. Gilbert, J. Parvizi, G. Klein, M. Mont, A. Marshall, M. Kraay, B. Stulberg, H. Cates, A. Malkani, C. M. Rimnac. Are 36+ MM Diameter HXLPE Bearings at Risk of Increased Wear from Modular Taper Corrosion with Ceramic and CoCr Heads? Poster No. 1768, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

S. M. Kurtz, D. MacDonald, S. Kocagoz, M. Tohfafarosh, J. Parvizi, M. Mont, A. Malkani. Retrieval Analysis of Sequentially Annealed Highly Crosslinked Polyethylene Used in Total Hip Arthroplasty. Poster No. 1778, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

R. L. Siskey, S. M. Kurtz, M. Kyomoto, U. Masaru, J. Weisenburger, H. Haider. In vitro Wear Performance of MPC-grafted UHMWPE for Total Hip Replacement. Poster No. 1785, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

R. J. Underwood, D. MacDonald, G. Higgs, J. Day, R. L. Siskey, S. M. Kurtz. Does Visual Inspection of the Taper Head / Stem Junctions in Metal-on-Metal Hips Accurately Characterize the Corrosion and Wear? Poster No. 1797, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

D. MacDonald, D. Baykal, S. Kocagoz, M. Tohfafarosh, S. M. Kurtz. Can Pin-on-Disk Testing Be Used to Assess the Wear Performance of Retrieved UHMWPE Liners? Poster No. 1817, 59th Annual Meeting of the Orthopaedic Research Society, San Antonio, TX, January 26-29, 2013.

Bozic K, Lau E, Ong K, Chiu V, Kurtz S, Vail TP, Rubash HE, Berry DJ. Risk factors for early revision

following primary TKA in Medicare patients. Paper No. 2, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 2-4, 2012.

Bozic K, Lau E, Ong K, Chiu V, Kurtz S, Vail TP, Rubash HE, Berry DJ. An electronic risk calculator for early revision in Medicare THA patients. Poster No. 71, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 2-4, 2012.

Ong K, Lau E, Kurtz S. Risk of complications, revision, and cancer for metal-on-metal patients in the Medicare Population. Poster No. 41, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 2-4, 2012.

Bozic K, Lau E, Ong K, Chiu V, Kurtz S, Vail TP, Rubash HE, Berry DJ. Risk factors for early revision following primary THA in Medicare patients. Paper No. 51, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 2-4, 2012.

Bozic K, Lau E, Ong K, Chiu V, Kurtz S, Vail TP, Rubash HE, Berry DJ. An electronic risk calculator for early revision in Medicare TKA patients. Poster No. 61, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 2-4, 2012.

Higgs G, Kurtz SM, Hanzlik JA, MacDonald DW, Klein G, Parvizi J, Mont M, Kraay M, Martell J, Gilbert J, Rimnac CM. Is increased modularity associated with increased wear debris in metal-on-metal total hip arthroplasty devices? James A. Rand Award, 22nd Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 1-3, 2012.

Ong KL, Lau E, Kemner JE, Kurtz SM. Comparative cost between vertebroplasty and kyphoplasty for the treatment of vertebral compression fractures. Poster No. P6, North American Spine Society 27th Annual Meeting, Dallas, TX, October 24-27, 2012.

Ong KL, Edidin A, Lau E, Kurtz SM. Mortality and morbidity for operated and nonoperated vertebral compression fracture patients in the Medicare population. Paper No. 154, North American Spine Society 27th Annual Meeting, Dallas, TX, October 24-27, 2012.

Ong KL, Edidin A, Lau E, Schmier J, Kemner JE, Kurtz SM. Cost-effectiveness analysis of treatments for vertebral compression fractures. Paper No. 27, North American Spine Society 27th Annual Meeting, Dallas, TX, October 24-27, 2012.

Kurtz SM, MacDonald D, Parvizi J; Klein GR; Lee GC; Marshall A; Mont M; Kraay K; Stulberg B, Malkani A, Rimnac R. Wear, oxidation, and mechanical properties of retrieved Crossfire and X3 HXLPE liners in THA. 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, October 3-6, 2012.

Higgs G, Kurtz SM, Hanzlik JA, MacDonald DW, Kane WM, Day JS, Klein G, Parvizi J, Mont M, Kraay M, Martell J, Gilbert J, Rimnac CM. Retrieval analysis of metal-on-metal total hip prostheses: Characterizing fretting and corrosion at modular interfaces. 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, October 3-6, 2012.

Kurtz SM, MacDonald D, Parvizi J; Klein GR; Lee GC; Marshall A; Mont M; Kraay K; Stulberg B, Malkani A, Rimnac R. Surface damage and oxidative properties of sequentially annealed highly crosslinked polyethylene in total knee arthroplasty. 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, October 3-6, 2012.

Ong KL, Lau E, Kemner JE, Kurtz SM. Comparative cost between vertebroplasty and kyphoplasty for the treatment of vertebral compression fractures. Poster No. PMD22, 17th Annual International Meeting of the International Society for Pharmacoeconomics and Outcomes Research, Washington, DC, June 2-6, 2012.

Kurtz S, MacDonald D, Parvizi J, Klein G, Hartzband M, Lee GC, Marshall A, Mont M, Levine H, Kraay M, Stulberg M, Rimnac C. Wear, oxidative stability, and reasons for revision of highly crosslinked polyethylenes in THA. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Higgs G, Kurtz SM, Berven S, Isaza J, Lanman T, MacDonald D, Jaekel D, Penmatsa M, Ho C, Steinbeck M. Characterization of in vivo change and histological response of retrieved PEEK rod systems for posterior lumbar stabilization and fusion. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Ho CM, MacDonald D, Penmatsa MK, Higgs G, Isaza J, Kurtz SM, Steinbeck M. Histological and retrieval analysis of PEEK spherical nucleus pulposus replacements, 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

MacDonald D, Jaekel D, Klein G, Day J, Levine H, Parvizi J, Kurtz S. Performance of dynamic knee antibiotic cement spacers in vivo. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Jaekel D, Davidson H, Hickok N, Kurtz SM. Bacterial colonization of silver composite PEEK materials. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Day J, Hanzlik J, Klein G, Levine H, Hartzband M, Parvizi J, Kraay M, Rimnac C, Kurtz S. Revision reasons and bone ingrowth in retrieved porous tantalum acetabular shells and femoral stems. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

MacDonald D, Higgs G, Parvizi J, Klein G, Hartzband M, Lee GC, Levine H, Kraay M, Rimnac C, Kurtz S. Oxidative stability, reasons for revision, and damage mechanisms of remelted highly crosslinked polyethylenes in TKA. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Kurtz SM, MacDonald D, Parvizi J, Klein G, Hartzband M, Lee GC, Marshall A, Mont M, Levine H, Kraay M, Stulberg B, Rimnac C. The impact of femoral head diameter and ceramic bearing surfaces on the wear of highly crosslinked polyethylenes in THA. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Jarman-Smith M, Brady M, Jaekel D, Kurtz SM. Characterization of an interconnected porous PEEK biomaterial with porosity suitable for osseointegration. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Conrad TL, Jaekel DJ, Kurtz SM, Roeder RK. Effects of the mold temperature on the mechanical properties and crystallinity of hydroxyapatite whisker reinforced PEEK scaffolds. 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Hanzlik J, Day J, Klein G, Levine H, Hartzband M, Parvizi J, Kraay M, Rimnac C, Kurtz S. Revision reasons and bone ingrowth in retrieved porous tantalum tibial trays and patellas, 9th World Biomaterials Congress, Chengdu, China, June 1-5, 2012.

Edidin AA, Ong KL, Lau E, Schmier JK, Kemner JE, Kurtz SM. Cost-benefit analysis of treatments for vertebral compression fractures. Paper No. O222, SpineWeek 2012, Amsterdam, Netherlands, May 28-June 1, 2012.

Kurtz SM, Ong KL, Lau E, Greenwald AS, Bozic K. Prevalence of metal-on-metal bearings in the United States. Talk 1, Symposium on Metal-on-Metal Total Hip Replacement Devices, Phoenix, AZ, May 8, 2012.

Ong K, Lau E, Kurtz SM. Risk of complications, revision, and cancer for metal-on-metal patients in the Medicare population. Talk 6, Symposium on Metal-on-Metal Total Hip Replacement Devices, Phoenix,

AZ, May 8, 2012.

Higgs G, Hanzlik JA, MacDonald DW, Kane WM, Day JS, Klein G, Parvizi J, Mont M, Kurtz SM. Fretting and corrosion at the taper connections of retrieved modular components from metal-on-metal total hip arthroplasty. Talk 13, Symposium on Metal-on-Metal Total Hip Replacement Devices, Phoenix, AZ, May 8, 2012.

Edidin AA, Ong KL, Lau E, Schmier JK, Kemner JE, Kurtz SM. Distinguished abstract: Cost-benefit analysis of treatments for vertebral compression fractures. Paper No. 6, Society of Interventional Radiology Annual Scientific Meeting, San Francisco, March 24-29, 2012.

Kurtz SM, Lau E, Watson H, Schmier J, Parvizi J. Economic burden of periprosthetic joint infection in the United States. Paper No. 212, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Kurtz SM, MacDonald D, Parvizi J, Klein G, Marshall A, Mont MA, Kraay M, Stulberg B, Rimnac CM. Oxidative and mechanical properties of highly crosslinked polyethylene in total hip arthroplasty. Paper No. 306, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

MacDonald D, Kurtz SM, Parvizi J, Klein G, Marshall A, Johnson AJ, Kraay M, Stulberg B, Rimnac CM. Retrieval analysis on the effects of head size on performance of crosslinked polyethylenes for total hip replacement. Paper No. 355, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Lovald ST, Malkani A, Lau E, Ong K, Kurtz SM, Schmier JK, Manley M. Outpatient total knee arthroplasty: A cost and outcomes analysis. Paper No. 411, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Bozic KJ, Lau E, Ong K, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Identifying the high risk total knee arthroplasty patient. Paper No. 490, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Bozic KJ, Lau E, Ong K, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Identifying the high risk total hip arthroplasty patient. Paper No. 570, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Bozic KJ, Lau E, Ong K, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Trends in total hip arthroplasty bearing surface utilization in Medicare patients. Poster No. 100, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

MacDonald D, Higgs G, Parvizi J, Klein G, Hartzband M, Levine H, Kraay MJ, Rimnac C, Kurtz SM. Surface damage and oxidative properties of remelted highly crosslinked polyethylenes in total knee arthroplasty. Poster No. 143, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Lovald ST, Lau E, Ong K, Kurtz SM, Schmier JK, Parvizi J, Bozic KJ. Cost and disease outcomes of total knee arthroplasty patients in the Medicare population. Poster 149, 79th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Francisco, CA, February 7-11, 2012.

Day JS, MacDonald DW, Ramsey, ML, Morrey BF, Connor PM, Kurtz, SM. Quantitative UHMWPE Wear Maps from Retrieved Total Elbow Arthroplasty. Poster No. 1246, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Jaekel DJ, Davidson HM, Hickok NJ, Kurtz SM. Measuring the Bacterial Adherence to Silver Composite

PEEK Materials. Poster No. 912, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Jaekel DJ, Klein GR, Day JS, Levine HB, Parvizi J, Austin M, Kurtz SM, Clinical Performance of Retrieved Dynamic and Static Knee Antibiotic Cement Spacers. Poster No. 915, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Higgs GB, MacDonald, DM, Jaekel DJ, Penmatsa MK, Ho CM, Lanman TH, Berven SH, Isaza

JE, Steinbeck MJ, Kurtz SM. Retrieval Analysis of PEEK Rods for Posterior Lumbar Stabilization and Fusion. Poster No. 1117, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Ho CM, Penmatsa MK, MacDonald DW, Higgs GB, Isaza J, Kurtz SM, Steinbeck MJ. Histology of Periprosthetic Tissues and Analysis of Retrieved PEEK Spherical Nucleus Pulposus Replacements. Poster No. 1118, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

MacDonald DW, Higgs G, Parvizi J, Klein G, Hartzband M, Levine H, Kraay M, Rimnac C, Kurtz SM. Material and Clinical Performance of Remelted Highly Crosslinked Polyethylene Used in Total Knee Arthroplasty. Poster No. 1999, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Kurtz SM, MacDonald DW, Parvizi J, Klein G, Hartzband M, Lee G, Marshall A, Mont M, Levine H, Kraay M, Stulberg B, Rimnac C. Do Large Diameter Femoral Heads and Ceramic Bearing Surfaces Impact the Revision and Wear of HXLPE? Poster No. 2022, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Kurtz SM, MacDonald DW, Parvizi J, Klein G, Hartzband M, Lee G, Marshall A, Mont M, Levine H, Kraay M, Stulberg B, Rimnac C. Material Performance and Reasons for Revision of 1st and 2nd Generation Highly Crosslinked Polyethylenes Used in Total Hip Arthroplasty. Poster No. 2024, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Baykal D, Day JS, Jaekel DJ, Katta J, Mansmann K, Kurtz SM. A Novel Method to quantify Wear of Hydrogels using Submerged Measurements. Poster No. 1729, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Baykal D, Day JS, Jaekel DJ, Katta J, Mansmann K, Kurtz SM. The Evaluation of Tribological

Properties of CyborGel for Replacing Articular Cartilage. Poster No. 2072, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Hanzlik JA, Day JS, Klein GR, Levine HB, Hartzband MA, Parvizi J, Kraay MJ, Rimnac CM, Kurtz SM. Revision Reasons and Bone Ingrowth in Retrieved Porous Tantalum Tibial Trays and Patellas. Poster No. 521, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Day JS, Hanzlik JA, Klein GR, Levine HB, Hartzband MA, Parvizi J, Kraay MJ, Rimnac CM, Kurtz SM. Revision Reasons and Bone Ingrowth in Retrieved Porous Tantalum Acetabular Shells and Femoral Stems. Poster No. 976, 58th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, February 4-7, 2012.

Kurtz SM, Lau E, Watson H, Schmier J, Parvizi J. Economic burden of periprosthetic joint infection in the United States. Paper No. 20, 21st Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 4-6, 2011.

MacDonald D, Higgs G, Parvizi J, Klein G, Hartzband M, Levine H, Kraay MJ, Rimnac C, Kurtz SM. Oxidative properties of remelted highly crosslinked polyethylenes in total knee arthroplasty. Paper No. 34, 21st Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 4-6, 2011.

Bozic KJ, Lau E, Ong K, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Comparative effectiveness of metal-on-metal and metal-on-polyethylene bearings in Medicare THA patients. Paper No. 9, 21st Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 4-6, 2011.

Kurtz SM, MacDonald D, Parvizi J, Klein G, Marshall A, Mont MA, Kraay M, Stulberg B, Rimnac CM. Mechanical, wear, and oxidative properties of 1st and 2nd generation highly crosslinked polyethylene in total hip arthroplasty. Poster No. 23, 21st Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 4-6, 2011.

Edidin AA, Ong KL, Lau E, Wang N, Kurtz SM. Life expectancy following diagnosis of a vertebral compression fracture. North American Spine Society 26th Annual Meeting, Chicago, IL, November 2-5, 2011.

Zampini JM, Ong KL, Lau E, Edidin AA, Kurtz SM. Hospital outcomes of VCF treatment with kyphoplasty and vertebroplasty in the United States. North American Spine Society 26th Annual Meeting, Chicago, IL, November 2-5, 2011.

Kurtz SM, Lau E, Ong K, Carreon L, Glassman S. Infection risk for primary and revision instrumented lumbar spine fusion in the Medicare population. North American Spine Society 26th Annual Meeting, Chicago, IL, November 2-5, 2011.

Ong K, Rundell S, Liepins I, Markel D, Kurtz S. Biomechanical modeling of acetabular component polyethylene stresses, fracture risk, and wear rate following press-fit implantation. FDA/NHLBI/NSF Workshop on Computer Methods for Medical Devices, Silver Spring, MD, September 7-9, 2011.

Edidin AA, Ong KL, Lau E, Kurtz SM. Distinguished abstract: Mortality risk for operated and non-operated vertebral fracture patients in the U.S. Medicare population. Society of Interventional Radiology 36th Annual Scientific Meeting, Chicago, IL, March 26-31, 2011.

Edidin AA, Ong KL, Lau E, Kurtz SM. Mortality risk for operated and non-operated vertebral fracture patients in the U.S. Medicare population. Paper No. OC40, ECCEO11-IOF European Congress on Osteoporosis and Osteoarthritis, Valencia, Spain, March 23-26, 2011.

Malkani A, Carroll C, Roberts C, Seligson D, Lau E, Kurtz SM, Ong K. Complication risk following treatment of acetabular fractures in the Medicare population. Paper No. 212, 78th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, February 15-19, 2011.

Bozic KJ, Ong K, Lau E, Kurtz SM, Vail TP, Rubash HE, Berry DJ. Risk factors for periprosthetic joint infection and peri-operative mortality following total hip arthroplasty in Medicare patients. Paper No. 480, 78th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, February 15-19, 2011.

Curtin B, Malkani A, Lau E, Kurtz SM, Ong K. Revision after total knee arthroplasty and unicompartmental knee arthroplasty in Medicare population. Poster No. 114, 78th Annual Meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, February 15-19, 2011.

Punt I, Baxter R, van Ooij A, Willems P, van Rhijn L, Kurtz SM, Steinbeck MJ. Submicron-sized UHMWPE wear particle analysis from revised SB Charité III total disc replacements. Poster 0381, Transactions of the Orthopaedic Research Society, Vol. 36, Long Beach, CA, January 13-16, 2011.

MacDonald D, Hanzlik J, Day J, Heffernan J, Higgs G, Klein G, Kraay K, Rimnac CM, Parvizi J, Kurtz SM. Bone ongrowth in retrieved porous tantalum monoblock tibial plates. Poster 1036, Transactions of the Orthopaedic Research Society, Vol. 36, Long Beach, CA, January 13-16, 2011.

Bozic KJ, Ong K, Lau E, Kurtz S, Vail TP, Rubash HE, Berry DJ. Risk factors of periprosthetic joint infection and peri-operative mortality following total hip arthroplasty in Medicare patients. Paper No. 7, 20th Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 5-7, 2010.

Bozic KJ, Ong K, Lau E, Kurtz S, Vail TP, Rubash HE, Berry DJ. Patient-related risk factors for periprosthetic joint infection and postoperative joint infection and postoperative mortality following total knee arthroplasty in Medicare patients. Poster, 20th Annual Meeting of the American Association of Hip and Knee Surgeons, Dallas, TX, November 5-7, 2010.

Malkani AL, Carroll C, Roberts CS, Seligson D, Lau E, Kurtz S, Ong K. Risk of complications following treatment of intertrochanteric hip fractures with IM nails and plate fixation in the Medicare population. Paper No. 40, 26th Annual Meeting of the Orthopaedic Trauma Association, Baltimore, MD, October 13-16, 2010.

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Selected Invited Seminars and Workshops

Kurtz S. Retrieval Research Programs - A Main Source to Create Sustainable Arthroplasty Technologies for the Future. 2nd International Combined Meeting of Orthopaedic Research Societies. Montreal, Canada, June 2019.

Kurtz S. The Future of PEEK Biomaterial in Implant Design. Orthopaedic Research Society. Austin, TX, February 2019.

Kurtz S. Are We Winning or Losing the War on Periprosthetic Joint Infection? ASTM Workshop on Antimicrobial Combination Devices. Atlanta, GA, November 2017.

Kurtz S. The Value of Explant Retrieval Analysis in Collaboration with Orthopaedic Registries. ASTM Symposium on Beyond the Implant: Retrieval Analysis Methods for Implant Surveillance. Toronto, ON, Canada, May 2017.

Kurtz S. Integration of a National Multi-Institutional Retrieval Program into Established Orthopaedic Registries in the US. The Northern Retrieval Registry Inaugural Conference. Newcastle, UK. May 2017.

Kurtz S. Advances in UHMWPE Biomaterials for Total Joint Arthroplasty. Spotlight Session, 2016 ORS Annual Meeting, Orlando, FL, March 2016.

Kurtz SM. Challenges to Meet the Rising Global Demand for Total Hip Arthroplasty. 45th Annual Meeting of the Japanese Society for Replacement Arthroplasty, Osaka, Japan, February 2016.

Kurtz S. Polyethylene Retrieval Analysis. Symposium on Articulations in Total Joint Replacement: Have We Lost Our Bearings? 2015 AAOS Annual Meeting, Las Vegas, NV, March 2015.

Kurtz S. Current Status of Technologies to Treat Periprosthetic Joint Infections. Workshop on Hot Topics in Regulatory Challenges within Orthopaedics. 2015 ORS Annual Meeting, Las Vegas, NV, March 2015.

Kurtz SM. Does taper corrosion occur with ceramic heads? Harvard Medical School, 44th Annual Advances in Arthroplasty Course. Boston, MA, USA, October 2014.

Kurtz SM. What new implant to choose after taper corrosion and taper damage? Harvard Medical School, 44th Annual Advances in Arthroplasty Course. Boston, MA, USA, October 2014.

Kurtz SM. The connection between stem and head - a new area of concern? Tribology Day, 15th EFORT Congress, London, England, June 2014.

Kurtz SM, Paxon L, Rimnac C. The value of explant retrieval analysis in collaboration with orthopaedic registries. 3rd International Congress of Arthroplasty Registries, Boston, MA, USA, May 2014.

Kurtz SM, Lau E, Ong K. Treatment of bias in observational data. 3rd International Congress of Arthroplasty Registries, Boston, MA, USA, May 2014.

Kurtz SM. 1st and 2nd generation HXLPE hip and knee implants: Lessons from retrieval analysis; 44th Annual Meeting of the Japanese Society for Replacement Arthroplasty, Okinawa, Japan, February 2014.

Kurtz SM. Issues of multiple modularity and taper corrosion in metal-on-metal total hip arthroplasty. 44th Annual Meeting of the Japanese Society for Replacement Arthroplasty, Okinawa, Japan, February 2014.

Kurtz SM. Fretting and corrosion: Concerns and reality. EFORT Tribology Symposium, WOA Congress, Beijing, China, November 2013.

Kurtz SM. Are all stem trunnions created equal? Invited speaker, Mini-Symposium: Bearing Surface Options in THR: Where are we today? Dallas, TX, USA, November 2012.

Kurtz SM. Arthroplasty surgery - a global perspective. Invited speaker, 25th Annual Congress of the International Society for Technology in Arthroplasty, Sydney, Australia, October 2012.

Kurtz S, Underwood R. Metal-on-metal hips: Device mechanics and failure modes. Orthopaedic and Rehabilitation Devices Panel Meeting of the Medical Devices Advisory Committee, U.S. Food and Drug Administration, Gaithersburg, MD, USA, June 2012.

Kurtz S. Update on clinical applications and international standards for PEEK. Invited speaker, State Food and Drug Administration (SFDA), Beijing, China, June 2012.

Kurtz S. Evolution of Polyethylene. Invited speaker, 14th International BIOLOX Symposium. Bearing Surface Options in Total Joint Replacement: The Experts Provide the Evidence. Las Vegas, NV, USA, May 2012.

Kurtz S. What are metal-on-metal retrievals really telling us? Workshop on Metal-Metal Bearings: Facts, Fictions, and Futures. 2012 ORS Annual Meeting, San Francisco, February 2012.

Kurtz S. Current trends and projected utilization of total joint replacements. Spotlight speaker, 2012 ORS Annual Meeting, San Francisco, February 2012.

Kurtz S. Articulation choices update. Invited speaker, Chinese Orthopaedic Association, Beijing, China, December 2011.

Kurtz S. Advances in PEEK Biomaterials for implant applications. Invited speaker, Medical Implants Technology Summit, Shanghai, China, September 2011.

Kurtz S. PEEK: Clinical applications of an international standard biomaterial. Invited speaker, China Medical Devices Information Network Annual Meeting, Beijing, China, January 2011.

Kurtz S. PEEK: A new frontier in structural biomaterials and bone scaffolds. Keynote speaker, Third International Conference on Mechanics of Biomaterials and Tissues, Clearwater, FL, December 2009.

Kurtz, S. UHMWPE implant technology in 2009: State of the art and future directions. Invited speaker, 4th International UHMWPE Meeting, Torino, Italy, September 2009.

Kurtz S. Performance of artificial disc bearings. Symposium on Controversies in Bearing Surface Science, 2009 ORS/AAOS Annual Meeting, Las Vegas, NV, February 2009.

Kurtz S. PEEK Biomaterials: From isoelastic hip stems to bone scaffolds. Symposium on Biological Materials Science, The Minerals, Metals & Material Society, San Francisco, CA, February 2009.

Kurtz S. Utilization in TJA: Something's got to give. Carl T. Brighton Workshop on Health Policy Issues in Orthopaedic Surgery, Tampa, FL, November 2008.

Kurtz S. Retrieval analysis of motion preserving spine implants. Future of Arthroplasty Standards Workshop, American Society for Testing and Materials, St. Louis, MO, November 2008.

Kurtz S. Explant analyses of disc arthroplasties. Symposium on Lessons Learned from Disc Arthroplasty, North American Spine Society, Toronto, Canada, October 2008.

Kurtz S. Implantable PEEK polymer: Properties, processing and applications. 8th World Biomaterials Congress, Amsterdam, the Netherlands, May 2008.

Kurtz S. How have total disc replacements in the spine influenced wear behavior? 2007 AAOS Osteolysis and Implant Wear: Biological, Biomedical Engineering, and Surgical Principles, Austin, TX, November 2007.

Kurtz S. In vivo oxidation and oxidation potential of historical, conventional, and highly crosslinked polyethylene. 3rd UHMWPE International Meeting - Polyethylene in Total Joint Replacement Systems: Concerns and Solutions. Facultad de Medicina, Universidad Autónoma de Madrid, Madrid, Spain, September 2007.

Kurtz S. Overview of the regulatory process and reimbursement for scientist inventors. Coulter Foundation Early Career Awardees Meeting, Key Biscayne, FL, August 2007.

Kurtz S. Wear and surface damage of total joint replacement components: Lessons of retrieval analysis. Wear Instructional Course, 7th Annual Meeting of the Spine Arthroplasty Society, Berlin, Germany, May 2007.

Kurtz S. Logistics and implementation of a multi-center, regional total hip replacement retrieval program to investigate in vivo oxidation of polyethylene. WG 3 Meeting of COST 537, Porto, Portugal, March 2007.

Kurtz S. Artificial discs. Artificial Discs Workshop, 52nd Annual Meeting of the Orthopaedic Research Society, March 2006.

Kurtz S. A primer on polyethylene. 7th Annual Alternative Bearing Symposium, University of Pennsylvania, PA, October 2004.

Kurtz S. Lessons learned from retrieval analysis of highly crosslinked UHMWPE. 7th Annual Alternative Bearing Symposium, University of Pennsylvania, PA, October 2004.

Kurtz S. Overview of medical device law and regulation. Introduction to food and drug law workshop, food and drug law institute. San Francisco, CA, June 2004.

Kurtz S. Advanced finite element analysis and model validation. ASTM Workshop, Salt Lake City, UT, April 2004.

Kurtz S. The required mechanical properties for hip and knee components. UHMWPE For Arthroplasty: Past, Present, and Future. University of Torino, Torino, Italy, September 2003.

Kurtz S. International perspective of standards development and overview of new miniature specimen mechanical test methods for UHMWPE. 25th Meeting of the European Society for Biomaterials, London, England, September 2001.

Kurtz S. Risk and failure analysis of medical devices. Central Atlantic States Association (CASA) of Food and Drug Officials Annual Medical Device Conference, May 2001.

Kurtz S. Oxidation resistance and shelf life of UHMWPE. New Test Methods for Evaluating the

Performance of Conventional and Crosslinked UHMWPE Workshop, F04 Meeting for the American Society for Testing and Materials, May 2001.

Kurtz S. Miniature specimen mechanical testing techniques for UHMWPE used in orthopedic components. Ultra-High Molecular Weight Polyethylene Workshop, 27th Annual Meeting of the Society for Biomaterials, April 2001.

Kurtz S. Morphology and mechanical behavior in UHMWPE after natural and accelerated aging. Polyethylene 2001 Workshop, 46th Annual Meeting of the Orthopaedic Research Society, March 2000.

Kurtz S. The mechanical behavior of UHMWPE at large deformations: Bulk and miniature specimen testing. Department of Mechanical Engineering Seminar, University of Leeds, October 1998.

Kurtz S. Polyethylene properties and contact simulation for total hip arthroplasty. Contact Mechanics Workshop, 43rd Annual Meeting of the Orthopaedic Research Society, February 1997.

Guest Lectures

- University of Tennessee, Memphis, TN
- Cleveland Clinic, Cleveland, OH
- Princeton University, Princeton, NJ
- Temple University, Philadelphia, PA
- Drexel University, Philadelphia, PA
- University of California at Berkeley, Berkeley, CA
- Stanford University, Palo Alto, CA
- University of Zaragoza, Zaragoza, Spain
- University of Madrid, Spain